
BIOLOGICAL ASSESSMENT

Disposal and Reuse
of
Fort McClellan, Alabama



April 1998

**BIOLOGICAL ASSESSMENT:
DISPOSAL AND REUSE OF
FORT McCLELLAN, ALABAMA**

Submitted to:
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List of Acronyms

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BA	Biological Assessment
BLM	Bureau of Land Management
BRAC 95	Defense Base Closure and Realignment Act of 1995
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DESMP	Draft Endangered Species Management Plan
DoD	Department of Defense
EBS	Environmental Baseline Survey
EE/CA	Engineering Evaluations/Cost Analysis
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FMC	Fort McClellan (Main Post and Pelham Range)
FMCRP	Fort McClellan Comprehensive Reuse Plan
FMRRRA	Fort McClellan Reuse and Redevelopment Authority
FWS	U.S. Fish and Wildlife Service
NPDES	National Pollution Discharge Elimination System
PDF	Project Design Feature
RI/FS	Remedial Investigation/Feasibility Study
SWPPP	Stormwater Pollution Prevention Plan
USFS	U.S. Forest Service
UXO	Unexploded Ordnance

Section 1 Introduction

Section 1:

Introduction

Fort McClellan, Alabama, was recommended for closure by the Defense Base Closure and Realignment Commission in July 1995. This recommendation was accepted by the President and Congress and became legally binding under provisions of Public Law 101-510 on 28 September 1995. Approximately 17,360 acres (7025 hectares) on Main Post have been declared surplus property for disposal by the Army and available for reuse by others. In addition, approximately 1140 acres (461 hectares) of BLM property on Main Post, currently leased by the Army, may also be disposed by the Army as an interrelated action. The Army will retain all of Pelham Range (22,245 acres) and portions of the Main Post cantonment area (approximately 409 acres) for use by the Army Reserve and Alabama Army National Guard.

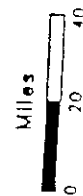
An Environmental Impact Statement (EIS) is currently in preparation to analyze environmental effects of disposal and reuse alternatives for the surplus property. The Army's proposed action is disposal, while reuse is an interrelated action of others (non-Army). Reuse planning is the responsibility of the Fort McClellan Reuse and Redevelopment Authority (FMRRA) of Alabama, a locally chartered entity. In addition to the Army's proposed action of disposal, there is also the Army's interim period between closure of Fort McClellan and disposal of surplus property. During this period there will be caretaker, environmental investigations and remediation, unexploded ordnance investigations and removals, and other actions necessary to prepare the property for transfer. These actions have potential to affect threatened and endangered species.

This Biological Assessment (BA) determines effects on threatened and endangered species resulting from the interim period (caretaker operations) and from proposed disposal and reuse of surplus property. This BA was developed in accordance with 50 CFR Part 402 and the Endangered Species Act of 1973 (ESA), as amended. This BA incorporates information by reference [50 CFR Part 402.12 (g)] from the Draft Environmental Impact Statement for Disposal and Reuse of Fort McClellan, Alabama, hereafter referred to as the DEIS. The DEIS was provided to the FWS, Daphne, Alabama Field Office.

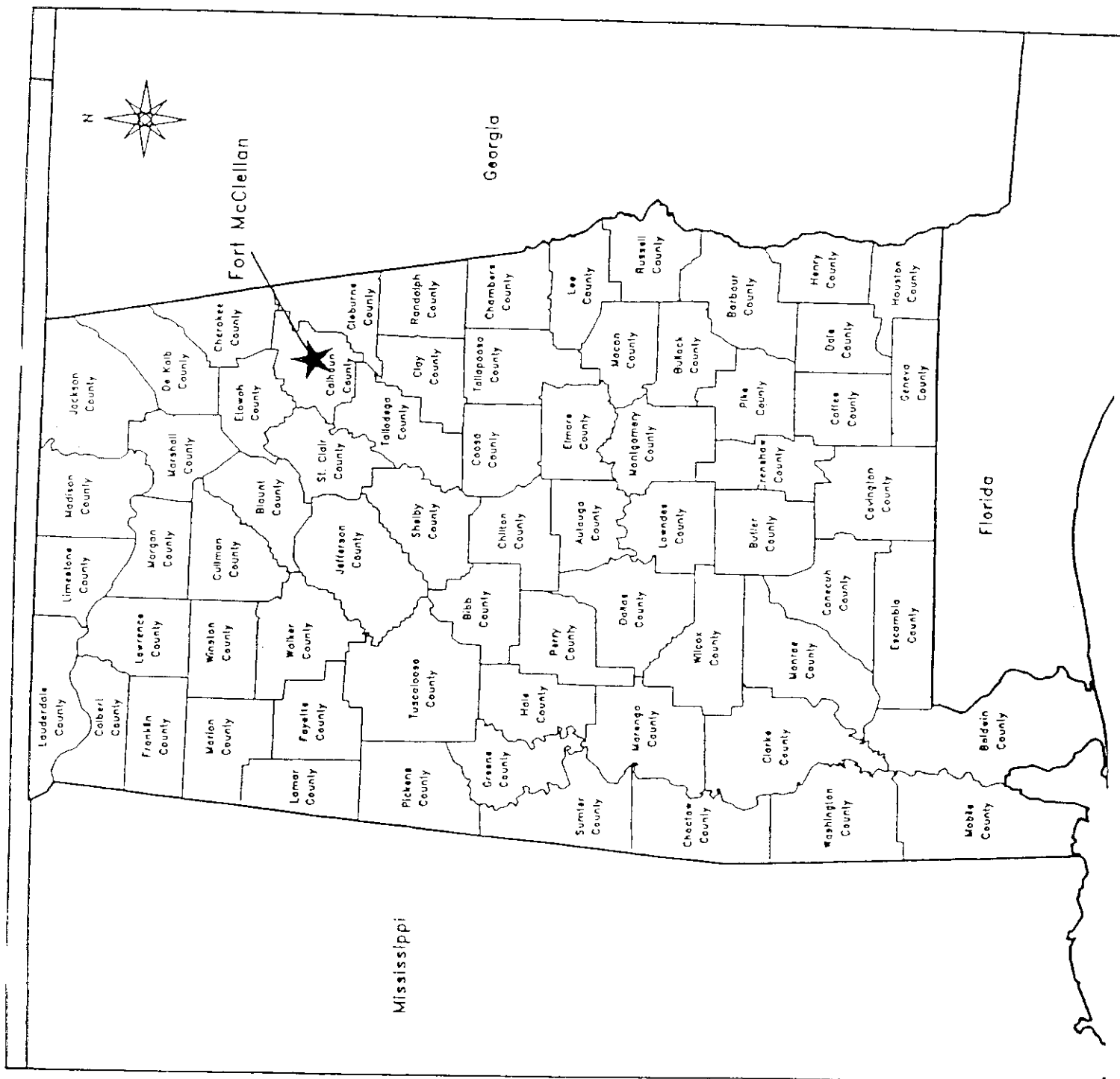
As a result of consultation with the FWS (Appendix A), review of information available regarding the presence of listed species on FMC, and coordination with individuals with related expertise, the BA focuses upon the assessment of effects to gray bats. Potential for effects to federally endangered red-cockaded woodpeckers (*Picoides borealis*) were also evaluated. Effects of the proposed action to these species are unlikely. Effects of disposal and reuse of Main Post to rare species other than federally protected species are addressed in the EIS.

The red-cockaded woodpecker was last detected on FMC in 1968. Subsequent surveys in 1972, 1982, 1985, 1992, and 1997 failed to find red-cockaded woodpeckers on FMC, and the species is considered extirpated on the Installation. The nearest known extant population inhabits the Talladega National Forest, approximately 5 to 7 miles (8 to 11 kilometers) east of Main Post. Based upon guidance described in "Guidelines for Preparation of Biological Assessments and Evaluations for the Red-cockaded Woodpecker" (Henry 1989), and discussions with Mr. Ralph Costa, Recovery Coordinator for the red-cockaded woodpecker, we determined the proposed action is unlikely to affect red-cockaded woodpeckers. Issues regarding suitable red-cockaded woodpecker habitat on Main Post, and potential future recovery of red-cockaded woodpeckers on the installation are addressed in the DEIS.

FIGURE 1-1. Location of Fort McClellan, Alabama.



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Section 2
Description of the Proposed Action

Section 2:

Description of the Proposed Action

2.1 INTRODUCTION

Under provisions of the Base Closure and Realignment Act of 1990 (Public Law 101-510), the 1995 Commission recommended closure of FMC, except for land and facilities required for a Reserve Component enclave and minimum essential facilities as required to provide auxiliary support to the chemical demilitarization operation at Anniston Army Depot, Alabama. Consistent with this Congressional mandate, the Army will cease performance of active missions at FMC no later than 12 July 2001.

Pursuant to the Defense Base Closure and Realignment Act of 1990 and recommendations of the Defense Base Closure and Realignment Act of 1995 pertaining to FMC, continuation of operations at the Installation is not feasible. Surplus property at FMC will be disposed or placed in caretaker operations after closure. The Army's preference is to dispose of surplus property.

Depending upon numerous factors, disposal of excess property at FMC is expected to occur as a single event transferring all excess property to one or more owners, or over time with multiple transactions involving the same or different owners. Regardless of the method of disposal, timing, or identity of new owners, reuse of excess property at FMC is reasonably foreseeable. This BA addresses effects of actions required to accomplish the Army's preferred

alternative for disposal and reuse of Fort McClellan: Encumbered Disposal and Medium-High Intensity Reuse.

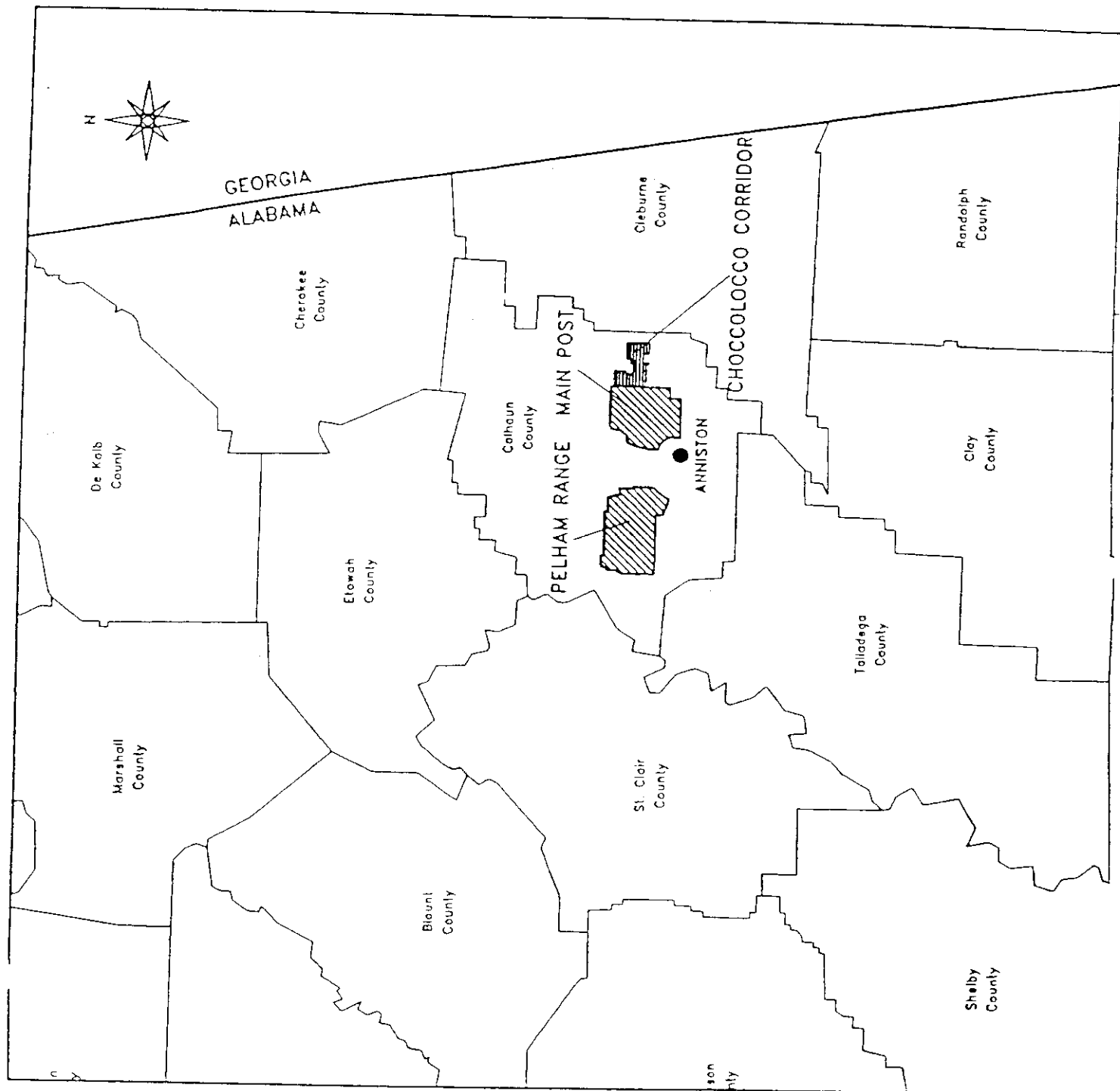
2.2 LOCATION OF FORT MCCLELLAN

Fort McClellan is in Calhoun County, in northeast Alabama contiguous to the city of Anniston and approximately 65 miles (104 kilometers) east of Birmingham, Alabama (Figure 2-1). Fort McClellan includes three tracts of state and federal government-owned lands in the foothills of the Appalachian Mountains:

- Main Post, consisting of approximately 18,929 acres (7660 hectares), adjoins Anniston, Alabama, and stretches six miles to the northeast towards Jacksonville, Alabama, in the valley west of the Choctolocco Mountains. Approximately 12,000 acres (4858 hectares) of Main Post are characterized by undeveloped mountains, of which approximately 1140 acres (461 hectares) are public domain lands withdrawn from the Bureau of Land Management (BLM).
- Choctolocco Corridor, consisting of approximately 4388 acres (1775 hectares) leased from the State of Alabama, is east of Main Post and connects FMC with the Talladega National Forest. Within the Talladega National Forest, approximately 100,000 acres (40,470 hectares) of woodlands are accessible for training in the event of national emergency or with approval of the U.S. Forest Service (USFS). The Choctolocco Corridor lease to the Army will not be renewed, and ownership of the land will remain with the State of Alabama.
- Pelham Range, consisting of approximately 22,277 acres (9015 hectares), is located approximately eight miles west of FMC's Main Post cantonment area. Pelham Range, which adjoins Anniston Army Depot one-half mile west of US Highway 431, is used for maneuvers, firing ranges, and field training. The entire Pelham Range will remain as Army property, but will be licensed from the U.S. Army to the Alabama Army National Guard.

2.3 DISPOSAL AND REUSE AREA

The BRAC 95 actions include retention of a Reserve Component Enclave, facilities to support chemical demilitarization operations at Anniston Army Depot, and two cemeteries.

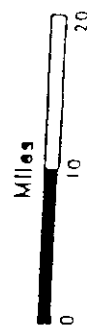


BIOLOGICAL ASSESSMENT DISPOSAL AND REUSE OF FORT MCCLELLAN, ALABAMA

FIGURE 2-1. Location of Fort
McClellan property within Calhoun
County, Alabama.

Fort McClellan

Land Leased By FMC From The
Alabama Forestry Commission



Accordingly, the Army plans to retain approximately 409 acres (165 hectares) of land within Main Post, and the entire Pelham Range area, for these purposes. The Main Post enclave area will include 16 discrete parcels (Table 2-1, Figure 2-2). In addition, BLM owns 1140 acres (461 hectares) in three parcels of land along the eastern boundary of Main Post (Figure 2-2). These BLM lands may be disposed along with the Army's excess property. Approximately 18,500 acres (7486 hectares), including BLM property, are available for disposal and reuse (18,929 acres Main Post total area less 409 acres to be maintained for Reserve training, support facilities for Anniston Army Depot, and two cemeteries).

This 18,500-acre (7486 hectares) area includes the heavily developed area in the flat northwestern portion of FMC. Cane Creek and its tributaries flow west through Main Post. The Main Post's administrative, housing and community service facilities are generally located along the northern and southern banks of Cane Creek. Firing ranges are located north, east, and south of the developed area and have firing fans generally oriented toward the Choccolocco Mountains. The remaining portion of Main Post includes the Choccolocco Mountains and contains large areas of undeveloped, forested tracts historically utilized for training and recreational activities.

The Main Post cantonment area contains various buildings including administration, transportation, maintenance, family housing, barracks, libraries, museums, a post office, banks, recreational facilities, community facilities, an auto craft shop, and health care centers. These buildings vary in condition, size, and reuse potential.

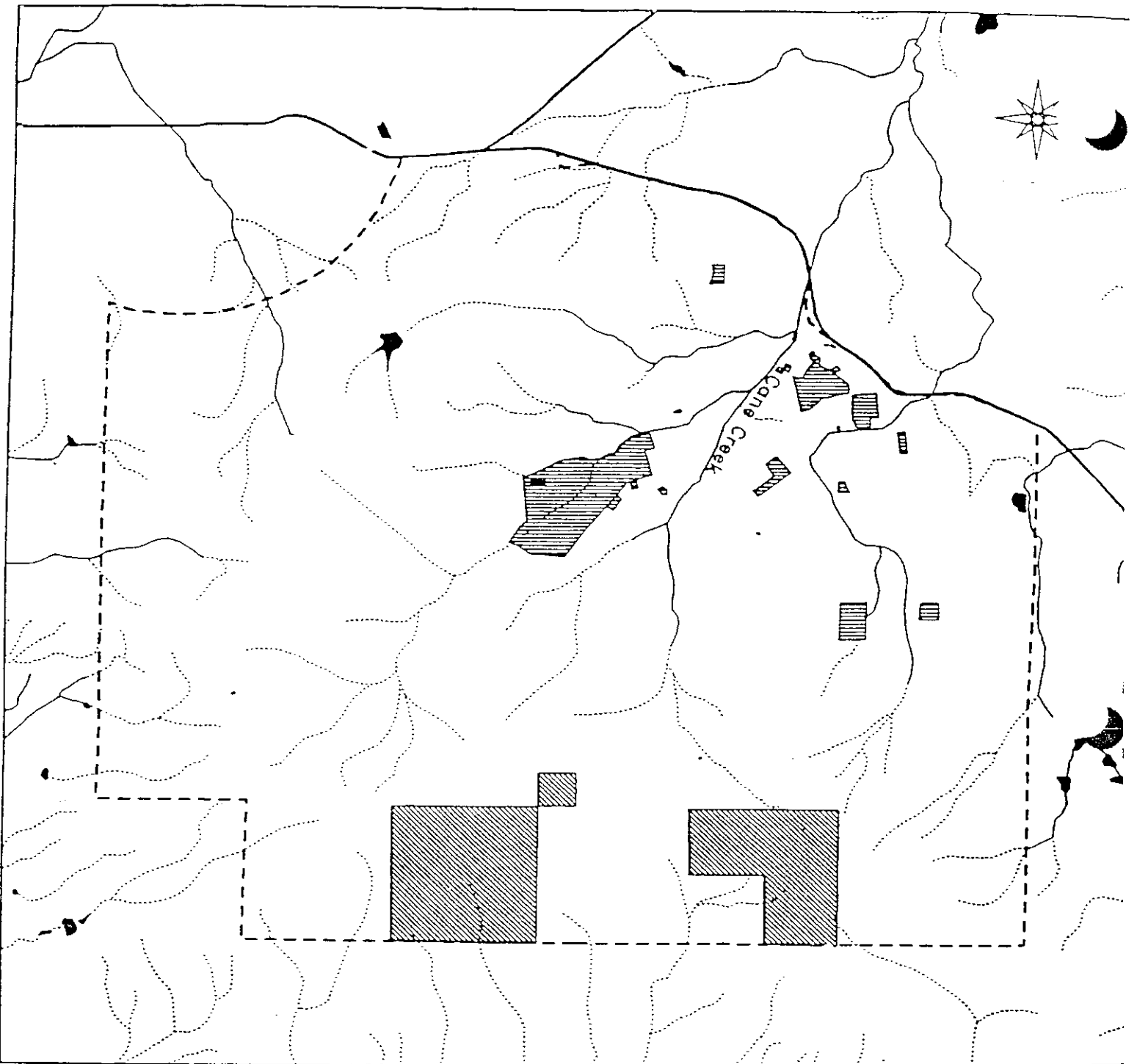
2.4 ENCUMBERED DISPOSAL

The Army's preferred disposal alternative is encumbered disposal. The Encumbered Disposal Alternative incorporates Army-imposed constraints on future owners as a condition of property disposal and reuse. Encumbrances may restrict future land use. Encumbering parcels will result in disposal actions that are timely, support Army requirements, and are compatible with future reuse plans.

Following closure of FMC, and prior to disposal, the Army is responsible for identifying significant cultural, natural, and man-made resources that must be used wisely or protected after ownership is transferred to non-Federal control. If appropriate, constraints protecting

TABLE 2-1. Fort McClellan Army National Guard/Reserve Component enclave property on Main Post.

Area Description	Estimated Size of Area	
	Acres	Hectares
1000 Area, Battalion Headquarters, Parking	24.4	9.9
Building 2290 (Dispensary)	1.4	0.6
Buildings 2281 / 2282	3.4	1.4
Joint Information Center	1.8	0.7
Battalion Headquarters	0.3	0.1
2200 Area and Triangle	53	21.4
Operations and Maintenance Shop # 10	5.4	2.2
Post Cemetery	3.4	1.4
U. S. Army Enclave	18	7.3
Military Operations in Urbanized Terrain Site	7.5	3
Chemical Defense Training Facility	26.5	10.7
Chemical stockpile Emergence Preparedness Program / Emergency Operations Center / Range Control	2	0.8
Boiler Plant	0.5	0.2
Chapel	1.5	0.6
1600 /1700 / 1800 Area	256	103.6
Prisoner of War Cemetery	4	1.6
TOTAL	409.1	165.5



BIOLOGICAL ASSESSMENT DISPOSAL AND REUSE OF FORT MCCLELLAN, ALABAMA

FIGURE 2-2. Excess property,
BLM land, and Reserve Component
Enclave on Main Post.

- Reserve Component Enclave
- BLM - Public Domain Land
- Excess Property

Miles
0 0.5 1 1.5

these resources may be incorporated as deed encumbrances or covenants during land transfer. The encumbrances placed on parcels of land will depend on the resources present.

After FMC is closed, all excess land will be placed in caretaker status until transfer of ownership. In addition to caretaker activities, the Army may conduct environmental restoration as appropriate before disposing of property.

2.4.1 Caretaker Status

Existing facilities and support equipment and systems at FMC are major assets encouraging and facilitating reuse after the Army completes its disposal action. Following closure, FMC facilities and equipment will be subject to caretaker operations until transfer to new owner(s) occurs. Under caretaker status, the Army will care for vacated facilities, conduct environmental restoration, and as circumstances arise, make interim leasing arrangements to the extent allowed by regulation and available funding.

In consultation with the FMRRA, the Army will determine required levels of maintenance and repair of the Installation's facilities and equipment. Initial levels of maintenance will not exceed the standard of maintenance and repair in effect on the date of closure approval, will not be less than maintenance and repair required to be consistent with government standards for excess and surplus properties, and will not require any property improvements, including construction, alteration, or demolition, except when demolition would be required for health, safety, or environmental purposes, or would be economically justified in lieu of continued maintenance expenditures (DoD 1995).

Typical activities that will continue during the caretaker phase include the maintenance of fenced areas to ensure adequate security, mowing and weed control on grounds within the cantonment area for aesthetics and fire protection, and trimming and maintenance of trees and brush to avoid interference with roadways, fences, or buildings. Diseased trees and vegetation will be identified and removed as appropriate. Irrigation and erosion control will be addressed as necessary. Natural resources management, hunting, and wildlife management would also be continued at a lower level of effort. The level of security at Fort McClellan would be the same as town and county jurisdictions within the surrounding area.

2.4.2 Environmental Restoration

The process leading to transfer of excess Army land includes certification that properties are suitable for disposal, and that environmental restoration of contaminated sites is accomplished to the degree required to protect human health and the environment and support proposed reuse. Environmental restoration activities at FMC will focus on remediating identified hazardous contamination caused by past training and waste disposal. The Environmental Baseline Survey (EBS) for Fort McClellan (Environmental Science and Engineering, Inc. 1997) identified the status of environmental restoration activities. The EBS identifies several sites that still require investigation to determine potential environmental hazards and appropriate restoration measures. Parcels requiring additional investigation and potential remedial actions will be addressed in the BRAC Cleanup Plan.

The presence of unexploded ordnance (UXO) on a BRAC parcel is considered to be a safety hazard. All UXO concerns are addressed on a case-by-case basis. It is anticipated that excess property at FMC will be disposed of in a number of smaller parcels rather than the entire Installation in one transaction. Therefore, specific UXO investigations and remedial actions will be accomplished over a period of several years. Timing of investigations will be based upon the intended reuse, disposal priorities, the complexity of proposed remedial actions, and other pertinent factors. Identifying specific locations and extent of pre-disposal cleanup activities will be accomplished during Remedial Investigations/Feasibility Studies (RI/FS) for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) compliance for hazardous and toxic wastes and Engineering Evaluations/Cost Analysis (EE/CA) compliance for ordnance and explosives, including UXO. These processes and studies provide for public participation and are subject to regulatory review.

2.5 MEDIUM-HIGH INTENSITY REUSE

The Fort McClellan Comprehensive Reuse Plan developed by the FMRRA is used for development of the proposed action, alternatives, and effects analysis for reuse of FMC (FMRRA 1997). Department of Defense policy states the local community's reuse plan will be used to define the proposed reuse action, and will be the basis for analysis of reuse alternatives. In the absence of a final approved local reuse plan, analyses will use the best available information, including draft reuse plans, to describe probable reuse alternatives.

Accordingly, a draft final reuse plan was provided to the Army by the FMRRRA in June 1997. The draft final reuse plan prepared by the FMRRRA represents the Medium-High Intensity Reuse (MHIR) level described in the DEIS. Medium-High Intensity is the more probable and attainable level of development for FMC based upon FMRRRA analysis of the existing market and ability to absorb additional development. The Army has adopted the FMRRRA reuse plan as their preferred reuse alternative to be analyzed in the EIS.

The FMRRRA draft final reuse plan provides a balance of public and private reuses of the excess property, including residential, office, retail, industrial, training/education, recreation and open space uses; and, retention of certain community facilities. Approximately one-half of the existing 6,083,000 square feet (565,110 square meters) of building space on Main Post is proposed for retention, including the Post Headquarters and adjacent administration buildings; the Military Police School facility; selected instructional, recreational and housing facilities; the Independent School; and the Commissary. Less than 4000 of the 18,500 acres comprising the disposal area is proposed for development, with the remaining area reserved for passive recreation and open space.

2.6 RELATED PROJECT DESIGN FEATURES

In addition to activities necessary to accomplish disposal and reuse of excess property, the Army proposes certain activities to protect gray bats utilizing the property. Project design features (PDFs) described in this section are an integral part of the proposed action. To minimize or avoid potential adverse effects to gray bats, each PDF addresses particular activities associated with disposal and reuse of excess property at FMC (Table 2-2). The Army commits to PDFs intended to protect gray bats during pre-disposal activities (Table 2-2).

Project design features intended to protect gray bats following transfer of excess property will be incorporated into deeds (Table 2-2). "Reuse PDFs" notify new property owners of the presence of gray bats and identify measures necessary to protect gray bats. The wording of reuse PDFs is shown as it will appear in deeds to the FMC golf course and properties within 50 feet of streams identified as moderate quality foraging habitat for gray bats (Cane, Dothard, Remount, South Branch, Ingram, and Twin Mountains creeks) when these properties are transferred out of Army ownership (Figure 2-3).

TABLE 2-2. Pre-disposal and reuse activities addressed by project design features to minimize or avoid potential adverse effects to gray bats.

Activity	During Pre-Disposal Period	Following Disposal
Modification of roost habitat	PDF No. 1	PDF No. 7
Modification of foraging habitat	PDF No. 2	PDF No. 7
Exposure to toxicants	PDF Nos. 3 & 4	PDF No. 8
Modification of water quality	PDF Nos. 4, 5, & 6	PDF Nos. 7 & 8

2.6.1 Project Design Feature Number 1

Fort McClellan has conducted extensive studies to determine if gray bats roost on the Installation (3D/I 1996a, 1996b, 1997). There are no caves on FMC and no gray bat roost sites have been identified on the Installation. Gray bats are known to roost in two caves approximately 1 mile (1.5 kilometers) northwest of Main Post, and under two bridges within 160 feet (50 meters) of Main Post. There is potential for gray bats to use similar man-made structures on Main Post. The Army proposes the following measures to minimize potential impacts to roosting gray bats during the period between closure of FMC and disposal of excess property:

- Before any bridge, cistern, or abandoned building is removed or modified, the structure will be inspected for the presence of bats.
- If bats or evidence of their recent use are found within or on a structure to be removed or modified, the species of bat will be identified.
- If gray bats or other federally listed species are present the FWS will be consulted prior to disturbance of the structure.

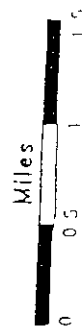
2.6.2 Project Design Feature Number 2

Fort McClellan will manage gray bat foraging habitat on Main Post. Current guidelines (Garland 1996, 3D/I 1996b) for FMC protect riparian forest by prohibiting tree removal within 50 feet (15.2 meters) of streams on the Installation designated as providing high or moderate quality foraging habitat for gray bats. If an activity required for disposal or reuse of excess

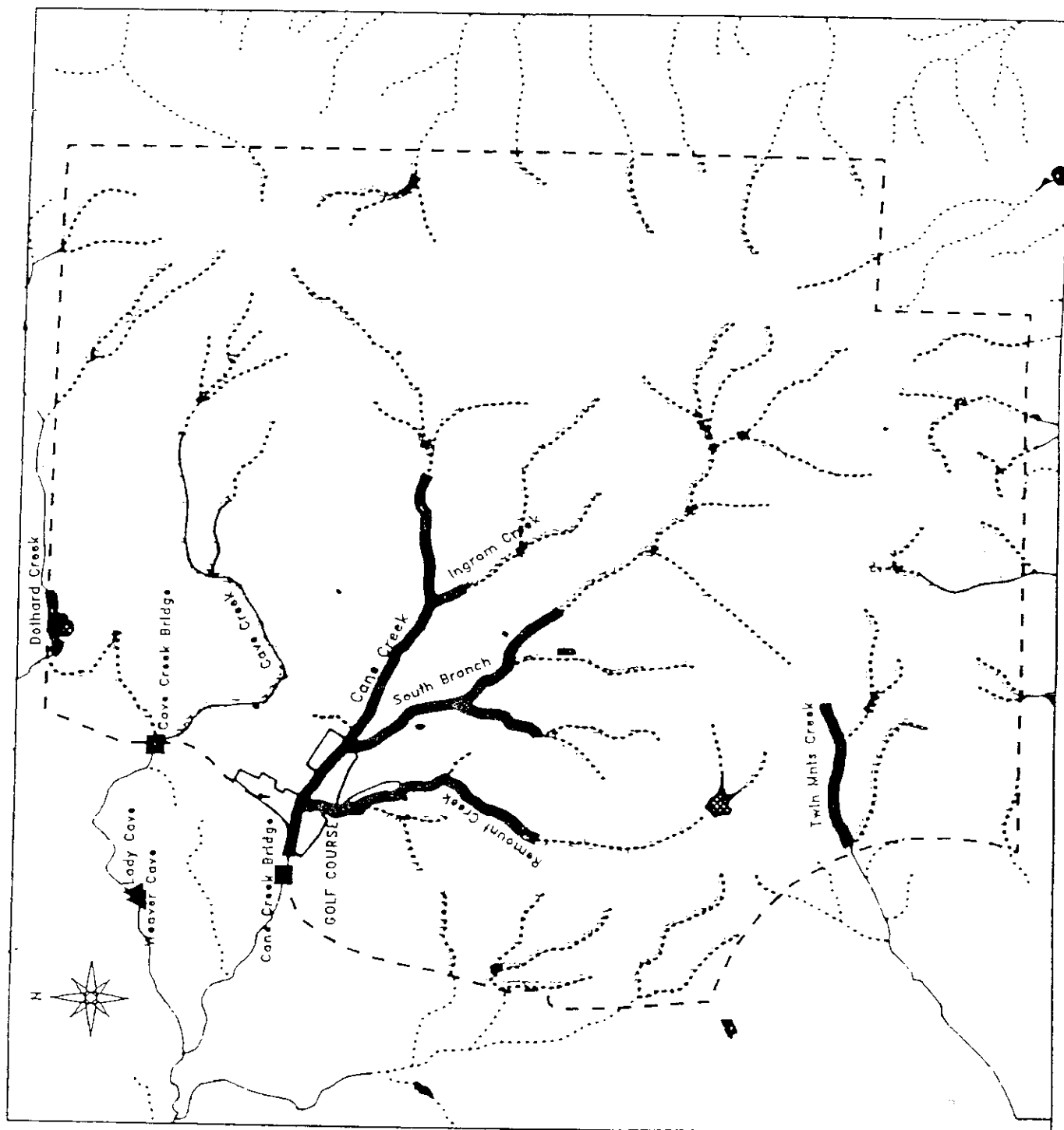
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FIGURE 2-3. Streams on Main
Post providing moderate quality
foraging habitat for gray bats.

- Golf Course
 - ▤ Main Post
 - Moderate Quality Streams
 - ▲ Low Quality Streams
 - Gray Bat Roost under Bridge
 - ▲ Gray Bat Roost In Cave
- Note: No high quality habitat on
Main Post.



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property involves removal of trees within this 50-foot zone, the Army will consult with the FWS. The FWS has previously concurred that tree clearing outside of this zone or along streams designated as low quality foraging habitat will not affect gray bats, and no consultation is required for such projects (3D/I 1996b). The Army also will consult the FWS if any activity requires alteration of water quality, water flow, or bank stability within streams providing high or moderate quality habitat for gray bats (Figure 2-3).

2.6.3 Project Design Feature Number 3

Pesticide use on Main Post will decrease as Army presence is reduced during caretaker status. However, the FMC golf course will maintain its current level of pesticide use until disposal. Due to the frequency of pesticide use and proximity of the golf course to known roosts and suitable foraging habitat, protective guidelines have been established for pesticide use on the FMC golf course. Appendix B contains a list of pesticides that are expected to be used on the golf course. A product summary, including use guidelines, for each of these pesticides also is included in Appendix B. The product summaries in Appendix B provide background information on each pesticide. Use guidelines listed within the product summaries were primarily derived from product labels, material safety data sheets, and manufacturer's comments, and address both human health and environmental concerns.

Fort McClellan will implement the following guidelines to avoid effects to gray bats from pesticide use on the golf course.

- Do not spray pesticides directly onto or into streams, lakes, ponds, or other bodies of surface water.
- Do not allow pesticides to drift onto water, and do not apply when weather conditions favor drift or runoff from treated areas.
- Do not apply within 20 feet (6 meters) of banks or natural levees associated with streams, lakes, ponds, or other bodies of surface water. Illoxan® should not be applied within 100 feet (30 meters) of surface water.
- Apply pesticides only during daylight hours.
- Apply pesticides only for approved uses.

- Follow all use and disposal directions as specified on labels.

2.6.4 Project Design Feature Number 4

Identifying specific locations and extent of pre-disposal cleanup activities will be accomplished during Remedial Investigations/Feasibility Studies (RI/FS) for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) compliance for hazardous and toxic wastes and Engineering Evaluations/Cost Analysis (EE/CA) compliance for ordnance and explosives, including unexploded ordnance. At sites requiring environmental restoration prior to disposal, potential direct, indirect, and cumulative effects to endangered and threatened species will be assessed. Contaminant type and potential transfer of contaminants into the environment will be identified. If screening level risk assessments indicate a likelihood of exposure exceeding safe levels, Section 7 consultation with the FWS will be initiated.

2.6.5 Project Design Feature Number 5

Surface water quality will be maintained by the Army at or exceeding its current level. Thirty-one industrial stormwater outfalls are identified in the Stormwater Pollution Prevention Plan (SWPPP) for FMC (CH2M Hill 1994). Fort McClellan currently has a National Pollution Discharge Elimination System (NPDES) permit (No. AL0055999) for 14 industrial outfalls and one process water discharge site. To maintain water quality, FMC will continue to implement Best Management Practices identified in the SWPPP and continue to comply with NPDES permit requirements until disposal.

2.6.6 Project Design Feature Number 6

Fort McClellan will implement erosion control measures during environmental restoration activities, including hazardous waste cleanup and UXO removal. These measures will minimize the movement of sediment to streams utilized by foraging gray bats. Standard erosion control measures in place for all BRAC-related environmental restoration activities are described below.

- Vegetative and structural erosion control practices will be constructed and maintained according to standards and specifications of Fort McClellan's Soil Erosion Plan (Nakata Planning Group 1994).

- Construction shall follow Alabama Clean Water Law requirements for construction activities.
- All erosion and sediment control measures are to be in place prior to, or as the first step in construction.
- All areas disturbed by construction activities shall be seeded and mulched or sodded and fertilized unless the area is to be paved or built upon.

2.6.7 Project Design Feature Number 7

Project Design Feature No. 7 advises new property owners of the presence of gray bats and identifies measures necessary to prevent take of gray bats. The following paragraphs will be placed in deeds for parcels within 50 feet of streams identified as moderate quality foraging habitat for gray bats (Figure 2-3).

Gray bats (*Myotis grisescens*) are known to forage near (insert name of stream(s) with high or moderate quality foraging habitat on this parcel, as shown on page 14 of this BA) ~~or on this parcel of land~~ and are known to roost in caves and under bridges in the vicinity. This parcel has been identified as suitable gray bat foraging habitat. Gray bats are listed as endangered by the U.S. Fish and Wildlife Service (FWS) and are afforded federal protection under the Endangered Species Act (ESA) of 1973, as amended. Section 9 of the ESA prohibits private landowners from "taking" (harm, harass, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) endangered species.

The following measures will limit potential take of gray bats on this parcel. Failure to follow these measures could subject the violator to criminal sanctions of the ESA.

- Gray bats are known to use man-made structures in the vicinity of this parcel. Prior to removing or altering the structure of a bridge, abandoned building, or cistern, the structure should be checked for the presence of gray bats. The FWS will be contacted if bats are found to be present.

- Trees along (insert name of stream(s) with high or moderate quality foraging habitat on this parcel, as shown on page 14 of this BA) provide protective cover and prey for foraging gray bats. Forest within 50 feet of this stream should not be removed. If removal of dead or live trees within 50 feet of this stream is necessary, the FWS should be consulted prior to cutting.
- Gray bats primarily feed on insects with an aquatic life stage; therefore, water quality and the physical characteristics of streams affect the amount and types of insects available for these bats. State and federal regulations pertaining to water quality and erosion control should be followed. Additionally, modification of stream banks and water flow should be avoided to maintain present water quality and physical structure.

2.6.8 Project Design Feature Number 8

Project Design Feature No. 8 will be incorporated as a deed restriction for disposal of the FMC golf course.

Gray bats are known to forage over the golf course. If you change land use of this area, you must contact the U.S. Fish and Wildlife Service. If land use changes to something other than a golf course, the U.S. Fish and Wildlife Service may require preparation of a Conservation Agreement or Habitat Conservation Plan.

Pesticides currently used on the golf course include: Daconil® 2787; Dursban 50W; 2,4-D Amine 4; MSMA; Pendimethalin; Illoxan® 3EC; Koban 30; Dimension®; and Roundup®. Use of these pesticides in compliance with the following guidelines will not adversely affect gray bats.

- Do not spray pesticides directly onto or into streams, lakes, ponds, or other bodies of surface water.
- Do not allow pesticides to drift onto water, and do not apply when weather conditions favor drift or runoff from treated areas.

- Do not apply within 20 feet (6 meters) of banks or natural levees associated with streams, lakes, ponds, or other bodies of surface water. Illoxan® should not be applied within 100 feet (30 meters) of surface water.
- Apply pesticides only during daylight hours.
- Apply pesticides only for approved uses.
- Follow all use and disposal directions as specified on labels.

Section 3

Scope of Analysis

Section 3:

Scope of Analysis

3.1 EFFECTS ANALYSIS AREA

The effects analysis area is defined as all surplus property within Main Post boundaries, including BLM property, and four known gray bat roosts outside Main Post boundaries (Weaver Cave, Lady Cave, Highway 21 bridge over Cave Creek, and Highway 21 bridge over Cane Creek). Effects to gray bats within this area are assessed. This BA does not assess effects of activities on property retained for the National Guard/Reserves.

The BLM may elect to have the Army dispose of the 1140 acres of public domain land within Main Post. The BLM property is included in the effects analysis area. This BA analyzes disposal of BLM property by the Army as an interrelated action.

3.2 EFFECTS ANALYSIS APPROACH

This BA focuses upon aspects of the proposed action with reasonable potential to affect gray bats. We assess potential effects of the Army's preferred alternatives for disposal and reuse of excess property at Fort McClellan. Potential impacts to gray bats analyzed in this BA are characterized in Table 3-1.

TABLE 3-1. Activities and resultant impacts analyzed for the disposal and reuse of Main Post.

Activities	Type of Impact
Exposure to toxicants	Gray bat fatality or illness
Modification of forest cover near stream corridors	Deterioration of foraging habitat
Removal or modification of known/potential roost structures or caves, increased human presence near roosts	Modification or disturbance of roosts
Sedimentation, deterioration of surface water chemistry, deterioration of stream substrate or banks	Reduction of aquatic prey base

Army actions necessary to dispose of excess property and activities to occur during caretaker status are assessed to determine potential effects to roosting and foraging gray bats. The Army has incorporated protective measures into the proposed action as PDFs. The purpose of these PDFs is to reduce or eliminate potential impacts of proposed Army activities. Project Design Features are part of the proposed action and are analyzed as proposed Army activities.

Reuse of excess property is guided by the FMRRA reuse plan. Potential effects of reuse of Main Post by private entities are also addressed in this BA. Additional PDFs have been incorporated into the Army's proposed action regarding reuse of disposed property. Reuse PDFs are intended to inform new property owners of the presence of gray bats, potential impacts to this species from particular activities, and responsibility of the land owner to avoid take as regulated by the ESA. Reuse PDFs will be included in deeds to new property owners.

Section 4
Natural History, Status, and Distribution of Gray
Bats (*Myotis grisescens*)

Section 4:

Natural History, Status, and Distribution of Gray Bats (*Myotis grisescens*)

4.1 LEGAL STATUS

Gray bats were listed as endangered by the FWS on 28 April 1976 and are protected under the ESA, as amended (Public Law 93-205). A recovery plan for gray bats was formulated by a FWS-sponsored recovery team (Brady et al. 1982). The recovery plan outlines three primary objectives: (1) prevent disturbance to important roost habitat, (2) maintain, protect, and restore foraging habitat, and (3) monitor population trends.

4.2 PHYSICAL DESCRIPTION

The pelage of gray bats is uniformly gray from the base to the tip of the hair. They have a forearm length of 1.6 to 1.8 inches (40 to 46 millimeters) and a wingspan of 10.8 to 11.8 inches (275 to 300 millimeters; Barbour and Davis 1969). A characteristic distinguishing this species from its congeners is the attachment of the wing membrane to foot at the ankle. In other species of myotine bats, wing membranes attach to the foot at the base of the toe. Additional distinguishing characteristics of gray bats include notched toenails and lack of a keeled calcar (Brady et al. 1982, Barbour and Davis 1969).

4.3 RANGE

Gray bat populations are concentrated in the cave regions of Missouri, Kentucky, Tennessee, and Alabama, with only a few known populations in southern Indiana (Brack et al. 1984, Mumford and Whitaker 1982, Barbour and Davis 1969). The cave regions of the above states comprise the summer and winter range for this species.

4.4 HABITAT REQUIREMENTS

4.4.1 Foraging Requirements

4.4.1.1 Foraging Habitat

Gray bats forage predominantly over water and in adjacent riparian vegetation. Foraging gray bats require open water (e.g., streams and lakes) that produces aquatic-based insects for food, and provides drinking water. Both large and small perennial streams are used by foraging gray bats (LaVal et al. 1977); there are no known limits to the size of streams gray bats will utilize for foraging. LaVal et al. (1977) observed gray bats flying downstream more often than upstream upon departure of a cave near a stream. This suggests a preference for wider downstream areas. Mist netting over streams has indicated some gray bats use even the smallest of permanently flowing streams, but most gray bats appear to use larger streams (LaVal et al. 1977).

Cover provided by riparian vegetation may be an important characteristic of foraging areas. Riparian vegetation provides shelter from predators, especially on nights with a bright moon (Fenton et al. 1977, LaVal and LaVal 1980). Observations of gray bat foraging on nights with a full moon versus nights with a new moon indicate lunar illumination may affect foraging activity. When released near caves, a greater percentage of gray bats flew cross-country from a release site during bright moon conditions than during new moon conditions (LaVal and LaVal 1980). During new moon nights, 62% of gray bats observed were foraging over water or in riparian strips, but on bright moon nights only 23% were seen foraging in these areas. During bright moon nights 20% of gray bats observed were foraging in ridge and hillside forest, while no gray bats were seen foraging in these forests on new moon nights (LaVal and LaVal 1980). Fenton et al. (1977) also observed bat activity in open areas was reduced on nights with a bright moon.

Gray bats utilize open flyways over streams. Gray bats generally forage close to the water surface (Clawson 1984). Foraging usually occurs below treetop height, often lower than 6.5 feet (2 meters) (LaVal et al. 1977). Gray bats foraging over a lake in Missouri were observed feeding from water level up to approximately 4.9 feet (1.5 meters), and occasionally as high as 9.8 feet (3 meters) (Clawson 1984). Large streams and rivers typically provide an abundant food source and ample flight space. Gray bats will use smaller streams if there is enough prey and if the stream corridor provides a clear flyway. Dense, overgrown vegetation along small streams commonly reduces or eliminates open space over the water.

Clawson (1984) observed gray bats foraging adjacent to bluffs near a lake, but concentrations of foraging gray bats were found over deep water in the center of the lake and over shallow, weedy areas. Gray bats foraged alone or in pairs, rarely in groups of three or more (Clawson 1984, LaVal et al. 1977).

LaVal et al. (1977) used a helicopter to observe gray bat foraging activity. The bats foraged over water with brief forays into riparian vegetation. The use of riparian forest likely accounts for the presence of terrestrial-based insects in their diet. The bats tended to be concentrated in groups of two or three adjacent to heavily wooded bluffs and hillsides. Few bats were observed foraging adjacent to pastures. LaVal and LaVal (1980) reported some or all gray bats from a maternity cave may switch from one foraging area to another during the course of a season, even when the change involves flying the opposite direction over pastures to a different body of water.

4.4.1.2 Prey

The diet of gray bats has been characterized from fecal analysis. Gray bats consume both aquatic and terrestrial-based insects. Clawson (1984) analyzed fecal samples taken from reproductively active gray bats captured at four Missouri caves. He identified 53 families comprising 13 orders of insects in the fecal pellets. Size of prey ranged from 0.08 to 1 inch (2 to 25 millimeters), but most were small, 0.08 to 0.4 inches (2 to 10 millimeters). Abundance of terrestrial and aquatic forms was variable due to variation in availability in the habitat occupied by the bats. Overall, Diptera (flies), Coleoptera (beetles), and Homoptera (plant hoppers) were the most frequently observed prey in the diet. Hymenoptera (wasps) and Plecoptera (stoneflies) were less frequent prey items. Ephemeroptera (mayflies) appeared to be a rare

item in the diet of gray bats; however, this may be due to their extreme digestibility. Temporal changes in diet apparently reflected changes in the insect fauna (Clawson 1984).

Brack et al. (1994) collected fecal samples from five gray bat maternity caves in Missouri. At three of these caves, reproductive females consumed predominately aquatic-based insects (orders Trichoptera (caddisflies), Plecoptera, Ephemeroptera, and Diptera) on most sample dates. In contrast, juveniles at these three caves often ate more terrestrial insects (orders Lepidoptera (moths), Coleoptera, Homoptera, Hemiptera (true bugs), and Hymenoptera). At the other two maternity caves, reproductive females and juveniles sometimes consumed more terrestrial-based insects than insects with an aquatic life stage. Males and non-reproductive females at two of the maternity caves typically consumed more aquatic-based than terrestrial-based insects. In all ages and sexes, individual variability in the types of insects eaten was generally high (Brack et al. 1994).

LaVal and LaVal (1980) examined 6272 fecal pellets obtained from 685 gray bats. Results showed insects of the aquatic orders Plecoptera, Ephemeroptera, and especially Trichoptera, are extremely important in the diet, accounting for as much as 98% in some samples. During late summer, small Coleoptera (Asiatic oak weevils) were commonly eaten, accounting for as much as 50% of the diet (Brack et al. 1994, LaVal and LaVal 1980). Asiatic oak weevils are a terrestrial species; therefore, indicating use of riparian forest during foraging. LaVal and LaVal (1980) found that on occasion, Lepidoptera were taken in sizable numbers (more than 50% moths at one site on two nights). At two of five sites, Diptera became important in late June and early July, comprising up to 55% of the diet on one night.

Comparisons of prey selection and prey availability indicate gray bats are opportunistic feeders. They appear to concentrate on aquatic-based insects available where they forage, but take advantage of other insects (especially Lepidoptera and Coleoptera) when they are abundant in their foraging areas (Brack et al. 1994, Clawson 1984, LaVal and LaVal 1980). Clawson (1984) found significant correlation between the types of insect captured in light traps (availability) and the types of insects eaten at foraging sites. Significant correlation of prey availability and prey selection was found for insect orders Coleoptera, Diptera, Hemiptera, and Plecoptera (Clawson 1984).

4.4.1.3 Foraging Travel Distance

Gray bats are known to fly up to 22 miles (35 kilometers) in a single night to forage over large bodies of water (Tuttle 1976). During summer mist netting over streams in eastern Missouri, gray bats were recaptured a mean distance of 6.9 miles (11.1 kilometers) from the cave in which they were banded (LaVal et al. 1977). Bats netted over streams were later recaptured at caves a mean distance of 7.8 miles (12.5 kilometers) from the stream site where they were banded (LaVal et al. 1977). LaVal and LaVal (1980) reported a maximum upstream dispersal distance of 12.4 miles (20 kilometers) from a cave. They also reported gray bats flying cross country as far as 15.4 miles (24.8 kilometers) from a cave to a lake. Gray bats released from Hambrick Cave on Guntersville Reservoir, Alabama, were detected with radiotelemetry at sites up to 18.6 miles (30 kilometers) from the release point (Thomas and Best in press).

Gray bats may fly from summer caves for some distance before foraging. After reaching a suitable foraging area, a gray bat may remain within a limited portion of stream or lake for the remainder of the evening. While observing gray bats foraging along a Missouri stream, LaVal et al. (1977) noted foraging areas of individuals seemed to be less than 0.6 miles (1 kilometer) in length.

4.4.2 Roosting Requirements

With few exceptions (3D/I 1997, Grigsby 1965, Gunier and Elder 1971), gray bats roost in caves year-round (Barbour and Davis 1969). Because of unique habitat requirements, $\leq 5\%$ of available caves are used as roosts by gray bats (Tuttle 1979). The majority of the population hibernates in five or six caves (Barbour and Davis 1969). Gray bats appear to prefer summer roost caves within 0.6 mile (1 kilometer) of a large river or lake, and rarely roost in caves > 2.5 miles (4 kilometers) from these features (Tuttle 1976). Gray bats are intolerant of disturbance and may desert a cave if disturbed (Tuttle 1979). Tolerance level of gray bats using atypical roosts such as bridges is undocumented. During winter, gray bats congregate in large, tight clusters on the cave ceiling. These clusters are sometimes several layers thick (Barbour and Davis 1969). Gray bats tend to select roost sites in hibernacula with a temperature between 7 and 10°C.

In late March or early April, gray bats begin leaving hibernacula, and males and females migrate to summer transient caves (LaVal and LaVal 1980). By the middle of May pregnant

females move from transient caves to maternity caves (LaVal and LaVal 1980). Maternity caves often have large streams running through them. During the maternity season, males and non-reproductive females roost in caves used by transient bats. Caves used by a large number of males during the maternity season are commonly called bachelor caves.

By late July most females and juveniles leave maternity caves (LaVal and LaVal 1980). After this time, maternity caves are often used as transient caves by males and females. During late July and August, gray bats of mixed ages and sexes can be found at many caves throughout the summering area, with frequent movement between caves (LaVal and LaVal 1980). In September females begin to congregate at transient caves, and by the end of the month most females return to hibernacula (LaVal and LaVal 1980). Males remain in the summering areas later than females. Most males leave summering areas by November, however, a small number of males may remain in summer transient caves through winter (LaVal and LaVal 1980).

4.5 REPRODUCTION

Males become reproductively active in October and November (Barbour and Davis 1969). Mating occurs at hibernacula. Females store sperm, and fertilization is delayed until spring. After leaving hibernacula, females migrate to transient caves in summering areas. In May, pregnant females form large colonies at maternity caves. Maternity colonies may contain from a few hundred to a quarter of a million individuals (Barbour and Davis 1969).

Females produce a single young in June (LaVal and LaVal 1980). Neonates are left in the cave while adults forage, but females return frequently to nurse their young (Barbour and Davis 1969). By the middle of July, young forage on their own. At this time the maternity colony disbands and disperses among other caves in the summering area (LaVal and LaVal 1980).

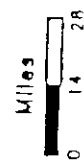
4.6 PRESENCE IN ALABAMA

The range of gray bats includes all of eastern Alabama (Barbour and Davis 1969). Northern Alabama supports the majority of known gray bat populations in the state. Fern Cave, in Jackson County, Alabama supports the largest number of hibernating gray bats range-wide (Figure 4-1). It is located near Paint Rock, approximately 87 miles (140 kilometers) north of

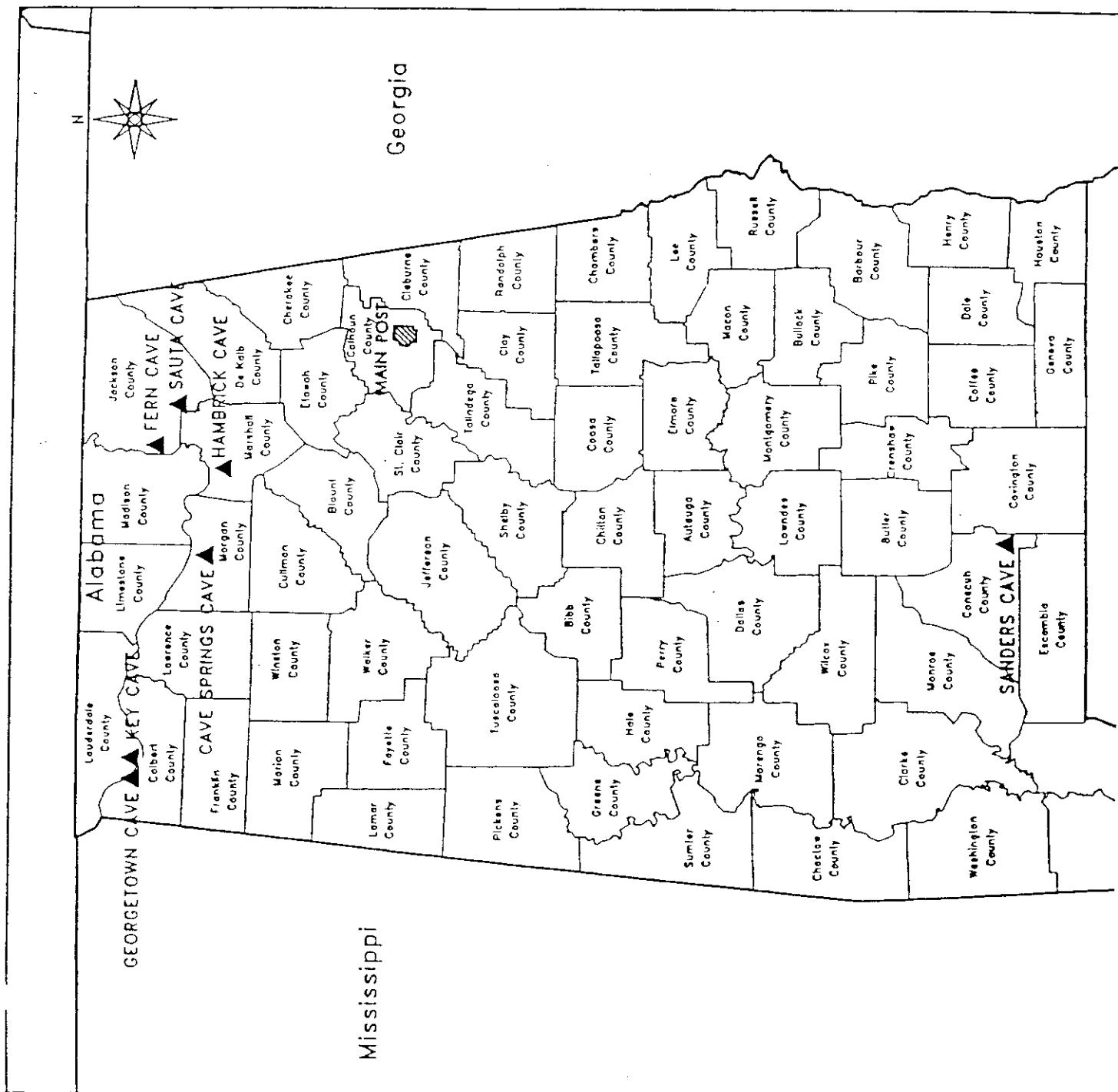
BIOLOGICAL ASSESSMENT DISPOSAL AND REUSE OF FORT MCCLELLAN, ALABAMA	FIGURE 4-1. Alabama caves historically used by gray bats during summer.	▲ Cave Location	Miles 0 14 28	3D/ENVIRONMENTAL
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FIGURE 4-1. Alabama caves historically used by gray bats during summer.

▲ Cave Location



3D/ENVIRONMENTAL



Fort McClellan. About 750,000 gray bats hibernate in Fern Cave (Gray Bat Recovery Team census 1991). In summer, Fern Cave is used by a maternity colony of about 400 gray bats (Hudson 1995).

The largest gray bat summer colonies in Alabama roost in Sauta Cave, Jackson County, and Hambrick Cave, Marshall County (Figure 4-1). Sauta Cave (also named Blowing Wind Cave) is a bachelor cave, housing primarily males during the maternity season. Hudson (1995) reports 105,000 to 180,000 gray bats using Sauta Cave during summer. In 1993, 550 non-volant young were observed in the cave, suggesting a maternity colony was established that year (Hudson 1995). Human disturbance of bats at Sauta Cave is discouraged by gates at both entrances of the cave. Sauta Cave is located on the Wheeler National Wildlife Refuge near Scottsboro, approximately 62 miles (100 kilometers) north of Fort McClellan. The cave is less than 328 feet (100 meters) from North Sauty Creek, a tributary of the Guntersville Reservoir. Both North Sauty Creek and Guntersville Reservoir provide foraging habitat for the colony at Sauta Cave.

Hambrick Cave is primarily a maternity cave. Approximately 55,000-67,000 gray bats roost in the cave during summer months (Hudson 1995). Hambrick Cave is located at Guntersville Reservoir, near the Guntersville Dam, about 43 miles (70 kilometers) north of Fort McClellan. Gray bats fly upstream and downstream from this cave to forage (Thomas and Best in press).

Two other large gray bat maternity caves are known in Alabama. Cave Springs Cave in Morgan County contains a population of approximately 65,400 gray bats (Figure 4-1). It is located about 71 miles (115 kilometers) northwest of Fort McClellan. Key Cave in Lauderdale County is approximately 118 miles (190 kilometers) northwest of the Installation (Figure 4-1). Key Cave houses a maternity colony of 25,000 to 35,000 gray bats (Hudson 1995). Both caves are near the Tennessee River or its tributaries.

Gray bat numbers have decreased over the past two decades; populations in two Alabama caves having decreased dramatically. Georgetown Cave and Sanders Cave once housed maternity colonies consisting of nearly 50,000 gray bats each, but have contained few or no gray bats in recent years (Hudson 1995). At Georgetown Cave in Colbert County, fewer than 10 bats have been observed emerging during each of the past three years (Hudson 1995). Georgetown cave is located over 124 miles (200 kilometers) northwest of Fort McClellan

(Figure 4-1). Sanders Cave in Conecuh County currently contains a large population of the southeastern myotis (*Myotis austroriparius*), but gray bats have not been documented there in over 20 years (Hudson 1995). Sanders Cave is located more than 124 miles (200 kilometers) south of Fort McClellan (Figure 4-1).

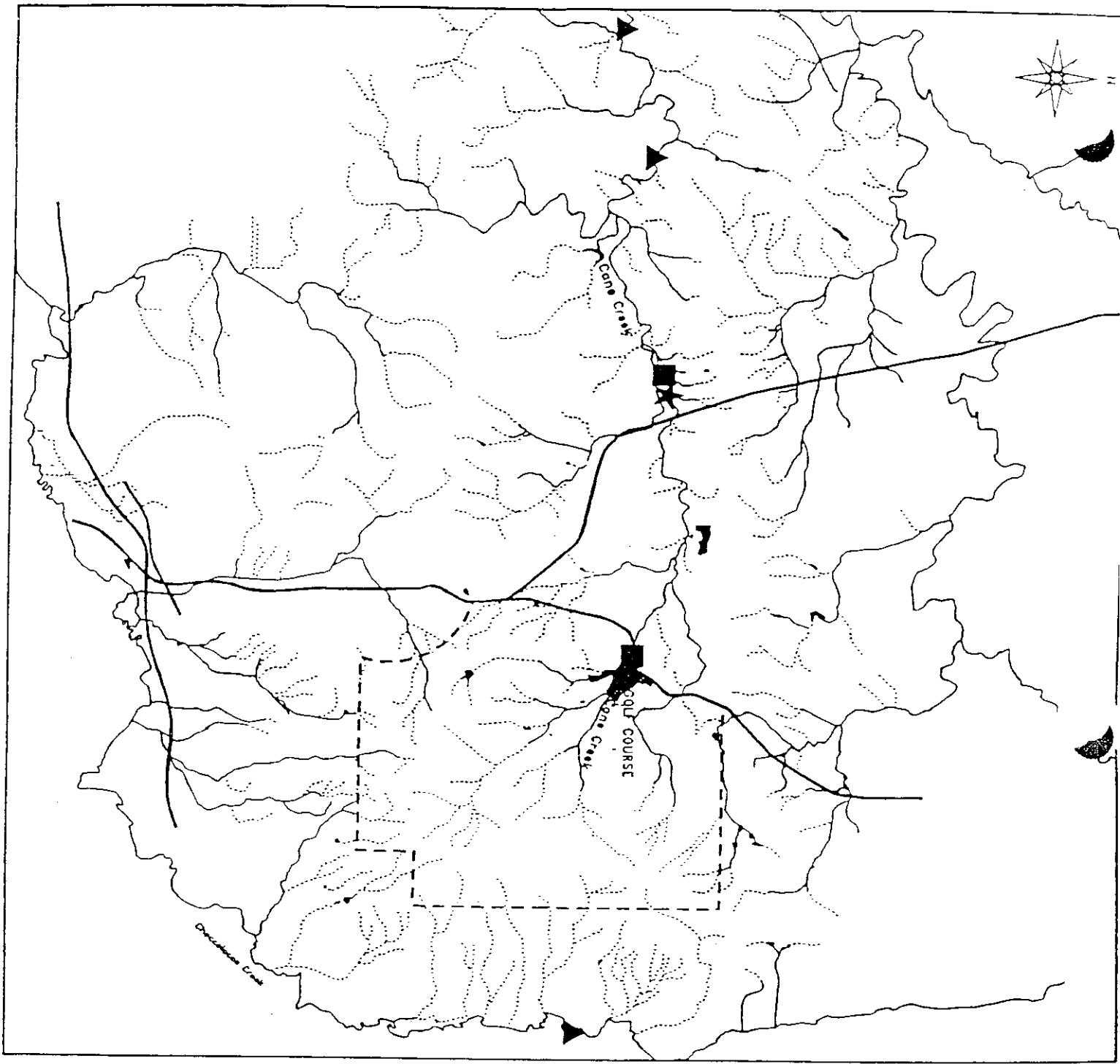
4.7 GRAY BAT OCCURRENCE NEAR FORT MCCLELLAN

During August 1995, 3D/International, Inc. (3D/I) captured two post-lactating female gray bats along Choccolocco Creek in the Choccolocco State Forest (3D/I 1996a). The capture site is approximately 2 miles (3.3 kilometers) from the eastern boundary of Main Post (Figure 4-2).

There is an historical record of a gray bat captured in Anniston (Hall 1981). No data exist describing the gender or season of capture for this specimen.

In July 1997, 3D/I found gray bats roosting in four locations near Main Post (Figure 4-3). The Highway 21 bridge over Cane Creek approximately 160 feet (50 meters) outside Main Post served as a bachelor roost for at least seven adult males during the maternity season (4 July 1997), and served as a transient roost for at least 17 gray bats (males and females) on 29 July 1997. A single gray bat of unknown sex was found under the Highway 21 bridge over Cave Creek approximately 160 feet (50 meters) outside Main Post on two occasions during summer 1997.

On 29 July 1997, 3D/I discovered adult male, adult female, and juvenile gray bats roosting in Weaver Cave and Lady Cave, both located approximately 1 mile (1.5 kilometers) from the northwestern boundary of Main Post (Figure 4-3). Two clusters ($n = 4, 6$) and one solitary gray bat were found in Weaver Cave. Two clusters ($n = 6, 7$) of gray bats were found in Lady Cave. Additional gray bats may roost in reaches of the caves not investigated. The time of year and mix of ages and sexes in these colonies indicates these bats were transitory. Weaver Cave and Lady Cave had previously been investigated for the presence of gray bats during the maternity season (early July 1997), but no individuals or sign of gray bats were found (3D/I 1997). These caves may serve as roosts for maternity colonies in the future.



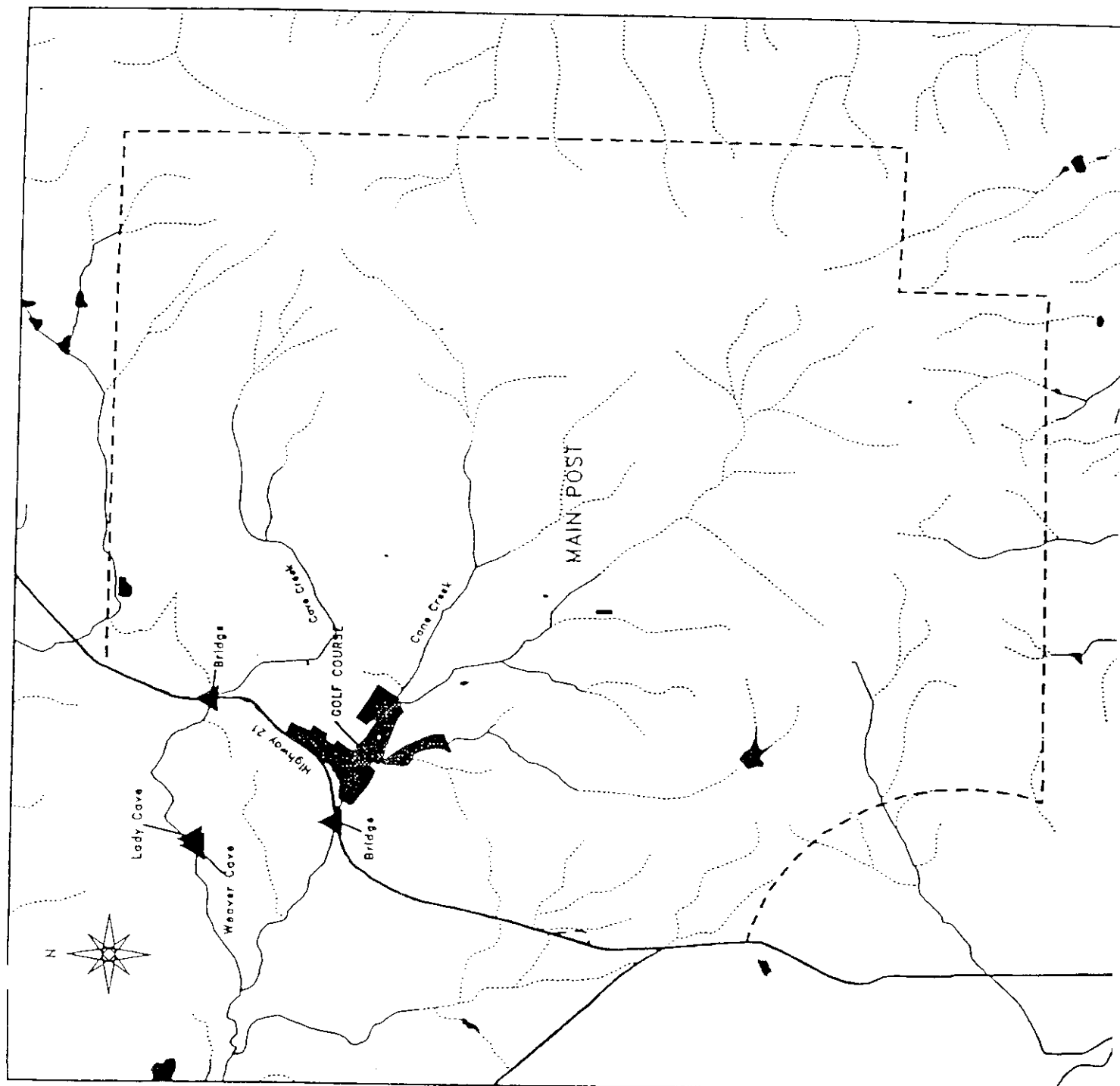
BIOLOGICAL ASSESSMENT
DISPOSAL AND REUSE OF
FORT MCCLELLAN, ALABAMA

FIGURE 4-2. Location of groy bolts captured on or near Main Post during mist net surveys in 1995, 1996, and 1997.

- ▲ 1995 capture site
- 1996 capture site
- ★ 1997 capture site
- 1996 and 1997 capture site

Miles
0 1 2 3

3D/INTERNATIONAL, INC.



BIOLOGICAL ASSESSMENT
DISPOSAL AND REUSE OF
FORT MCCLELLAN, ALABAMA

FIGURE 4-3. Known gray bat
roosts on or near Fort McClellan.

▲ Gray bat roosts



3D/INTERNATIONAL, INC.

4.8 GRAY BAT OCCURRENCE ON FORT MCCLELLAN

3D/International documented gray bats using Fort McClellan during mid- and late-summer (3D/I 1996a, 1996b, 1997). Reproductive and transient adults have been captured over Cane Creek. Mist net surveys conducted during August 1995 resulted in capture of 13 gray bats (five post-lactating females, seven adult males, and one of undetermined sex) on Cane Creek within Pelham Range (Figure 4-2). Mist net surveys conducted in June and July 1996 resulted in the capture of two gray bats (a lactating female and an adult male) on Pelham Range and two adult male gray bats on Main Post along Cane Creek at the golf course (Figure 4-2). Mist net surveys conducted in June and July 1997 resulted in the capture of one adult male on Cane Creek near the golf course and two post lactating females on Cane Creek just within the eastern boundary of Pelham Range (Figure 4-2).

The capture of a reproductive female and three adult males during summer 1996 indicated at least one maternity colony and one bachelor colony is located within approximately 22 miles (35 kilometers) of the Installation. Gray bats may travel as far as 22 miles from a roost site to a foraging area in a single night (Tuttle 1976). Radiotelemetry studies conducted by 3D/I in 1997 revealed one bachelor roost under a bridge, a second bridge roost for a single gray bat, and two transitional cave roosts outside FMC boundaries (Figure 4-3); no roosts were found on the Installation.

The August 1995 captures of post reproductive females and adult males indicate gray bats also forage on the Installation during the transient period following the maternity season. After the maternity season, females and juveniles generally disperse to caves other than the maternity cave. Therefore, several different caves or structures may be used near or on the Installation throughout summer and fall. This information is important for determining potential effects of seasonally dependent activities on foraging and roosting gray bats.

Section 5
Relevant Studies Completed on Fort McClellan

Section 5:

Relevant Studies Completed on Fort McClellan

This BA analyzes potential for, and magnitude of, direct, indirect, and cumulative effects based upon the best available scientific and commercial data, including studies described in this document. Fort McClellan has completed studies to:

- Assess the location and quality of suitable gray bat habitat on FMC
- Document presence and distribution of gray bats on FMC
- Assess the environmental fate of certain training chemicals used on FMC
- Identify roost sites used by gray bats foraging on FMC

This assessment incorporates results of these studies to identify potential effects of disposal and reuse of the Installation on gray bats.

5.1 LITERATURE REVIEW AND HABITAT CHARACTERIZATION

To assess the current status of gray bats on and near Fort McClellan, 3D/I reviewed published and unpublished literature pertaining to cave locations and bat occurrence in Calhoun and surrounding counties (3D/I 1996a). 3D/International also solicited information regarding these

issues from state and local agencies and private organizations, including the National Speleological Society.

A search for caves was conducted on FMC between 1 and 4 March 1996 (3D/I 1996a). The search revealed no caves within FMC boundaries. 3D/International also searched historical records for caves near the Installation. Thirty-five caves were recorded within 22 miles (35 kilometers) of gray bat capture sites on Main Post (Table 5-1 and Figure 5-1).

In February and July 1996, 3D/I assessed the quality of habitat on Main Post and Pelham Range for foraging gray bats. Streams, lakes, and ponds on the Installation were ranked as providing high, moderate, or low quality habitat for gray bats. High quality habitat was found only on Pelham Range along Cane Creek. Moderate and low quality foraging habitat was identified on Main Post (Figure 5-2). 3D/International provided recommendations for management of high and moderate quality habitat to be incorporated into the FMC Endangered Species Management Plan (3D/I 1996a).

5.2 INVESTIGATIONS TO DETERMINE PRESENCE OF GRAY BATS AT FORT MCCLELLAN

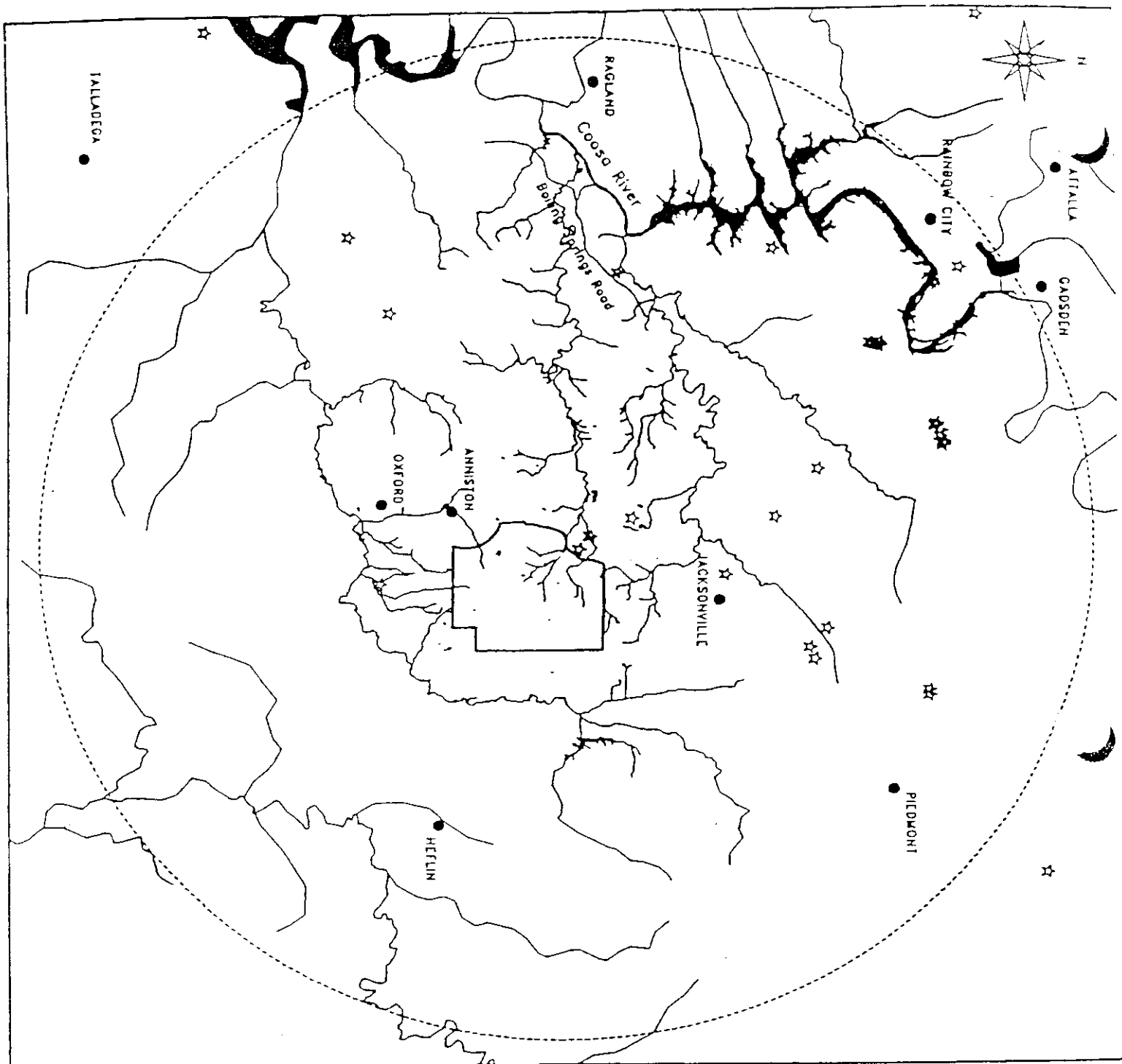
During 1996, 3D/I investigated the presence of gray bats at potential roosting and foraging sites on and near FMC (3D/I 1996b). Caves near the Installation, and man-made structures on Main Post were searched for signs of gray bat colonies. The distribution of gray bats on Main Post and Pelham Range was investigated by mist netting stream corridors identified as moderate or high quality foraging habitat.

During February and March 1996, four caves just outside Main Post and Pelham Range were searched for hibernating bats or signs of summer use by gray bats. No gray bats or guano accumulation were found (3D/I 1996b).

Structures on main post such as bunkers, storm sewers, and abandoned cisterns were investigated for live bats, guano, stains on ceilings or beams, bat carcasses, and other evidence indicating bats currently or historically used these features. No gray bats were observed roosting in man-made structures on the Installation. However, fresh bat guano found in an abandoned cistern in February 1996 indicates an undetermined species of bat had been using this structure. Fort McClellan personnel reported seeing bats roosting within the cistern

TABLE 5-1. Names and locations of caves within 22 miles (35 kilometers) of gray bat capture sites on Main Post (3D/I 1996a, Varnedoe 1973).

Cave Name	County	Location Relative to Main Post Capture Sites		
		Distance		Direction
		kilometers	miles	
Unnamed Cave	Calhoun	0.9	0.6	North
Little Weaver Cave	Calhoun	1.0	0.6	North
Weaver Cave	Calhoun	1.9	1.2	Northwest
Lady Cave	Calhoun	1.9	1.2	Northwest
Meadows Cave	Calhoun	5.0	3.1	Northwest
Erby Cave	Calhoun	11.0	6.8	North
Oxford Cave	Calhoun	12.7	7.9	South
Wilson Cave	Calhoun	14.3	8.9	North
Cedar Mountain Cave	Calhoun	17.9	11.2	Northwest
Maxwellborn Cave	Calhoun	18.1	11.3	Northeast
Daugette No.2 Cave	Calhoun	18.8	11.7	Northeast
Daugette No.1 Cave	Calhoun	18.8	11.7	Northeast
Baswell Cave	Calhoun	20.0	12.4	West
Millers Cave	Calhoun	20.7	12.9	Southwest
Green Valley Cave	Calhoun	25.1	15.6	Northwest
Small Cave	Etowah	25.1	15.6	Northwest
Lin and Randys Pit	Calhoun	25.3	15.7	Northwest
Short Cave	Calhoun	25.3	15.7	Northwest
Greens Creek MT. Cave	Calhoun	25.4	15.8	Northwest
Joint Cave	Etowah	25.5	15.8	Northwest
Little Sink Cave	Etowah	25.5	15.8	Northwest
Crawl Cave	Etowah	25.5	15.9	Northwest
Abrupt End Cave	Etowah	25.6	15.9	Northwest
Quarry Side Cave	Etowah	26.3	16.3	Northwest
Mule Glove Pit	Etowah	26.3	16.3	Northwest
Zuber Quarry No.1 Cave	Etowah	26.3	16.4	Northwest
Cedar Tree Pit	Etowah	26.4	16.4	Northwest
Zuber Quarry No. 2 Cave	Etowah	26.4	16.4	Northwest
Coluin Cave	Etowah	26.4	16.4	Northwest
Coluin Pit No.2	Etowah	26.4	16.4	Northwest
Spiral Cave	Etowah	26.5	16.5	Northwest
Robertson Cave	Calhoun	26.6	16.5	Northeast
Wrights Cave	Calhoun	26.8	16.6	Northeast
Dulaney Cave	Talladega	26.8	16.6	Southwest
Merit Cave	Etowah	33.1	20.5	Northwest

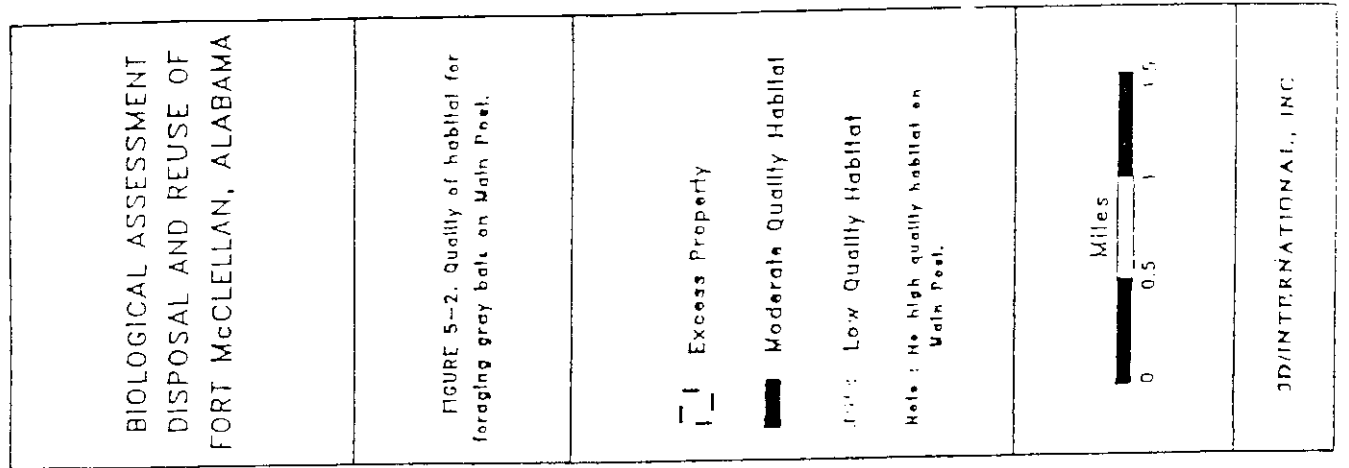
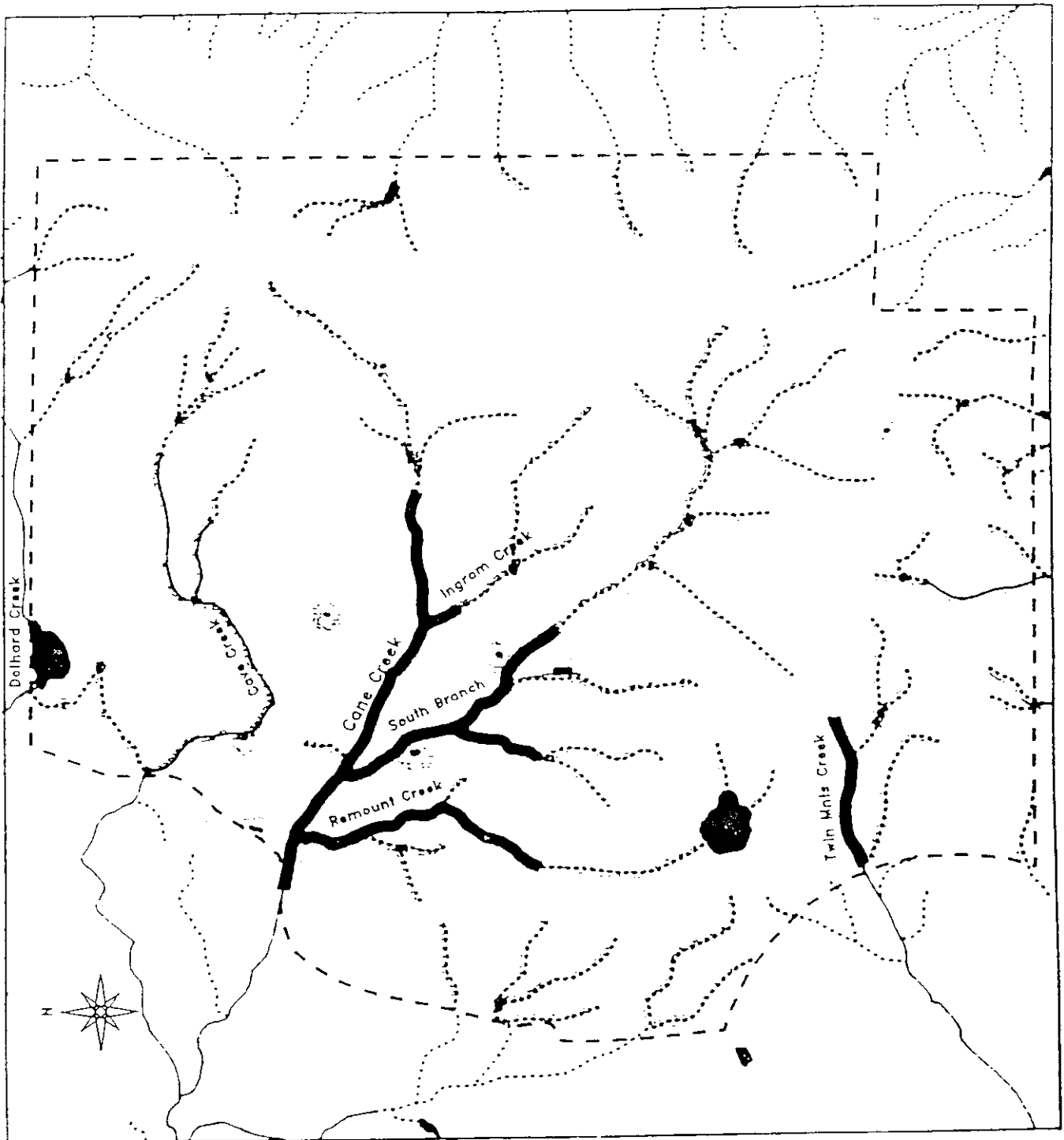


BIOLOGICAL ASSESSMENT DISPOSAL AND REUSE OF FORT MCCLELLAN, ALABAMA

FIGURE 5-1. Caves within 22 miles (35 kilometers) of gray bat capture sites on Main Post.

- ☆ Cave
- Main Post
- 22-mile radius buffer
- Stream
- Town

Miles
0 4 8 12



during summer 1995. 3D/International conducted additional investigations of this cistern during June and July 1996 and July 1997; no bats or fresh sign was found within the cistern. (3D/I 1996b, 1997).

From 25 June to 17 July 1996, mist net surveys were conducted at 17 sites on Pelham Range and Main Post (3D/I 1996b). A total of 102 bats of five species were captured, including four gray bats (one lactating female and three adult males). On Pelham Range, a lactating female and an adult male gray bat were captured over Cane Creek near the eastern boundary. Two adult male gray bats were captured over Cane Creek near the golf course on Main Post (Figure 5-3).

5.3 RADIOTELEMETRY STUDIES OF GRAY BATS AT FORT MCCLELLAN

3D/International tracked gray bats captured on FMC to determine roost locations (3D/I 1997). Mist nets were used to capture gray bats foraging on Main Post and Pelham Range (Figure 5-3). Four gray bat roosts, two caves and two bridges, were successfully located during this study.

An adult male gray bat captured over Cane Creek near the FMC golf course was tracked to a roost site under a bridge (3D/I 1997). This gray bat was found roosting with approximately six other adult males during the maternity season (4 July 1997) under the Highway 21 bridge over Cane Creek approximately 160 feet (50 meters) outside the Baltzell gate to Main Post (Figure 3-4). One of the bats found in this colony had a red arm band (band number 1862). 3D/International confirmed this bat was one captured near the FMC golf course during 1996. On 29 July 1997, during the transitory season following the maternity season, approximately 17 gray bats (males and females) were found roosting under the bridge. The gray bats were roosting in holes on the underside of the concrete bridge.

During this study an additional bridge roost was found while searching for roosting gray bats. On two occasions (3 & 29 July 1997), a gray bat was observed roosting on the Highway 21 bridge over Cave Creek (Figure 5-4). The bridge is approximately 160 feet (50 meters) outside the western boundary of Main Post. This study establishes knowledge of gray bats using man-made structures in Alabama. The study also documents use of a bridge during maternity and transitory seasons.

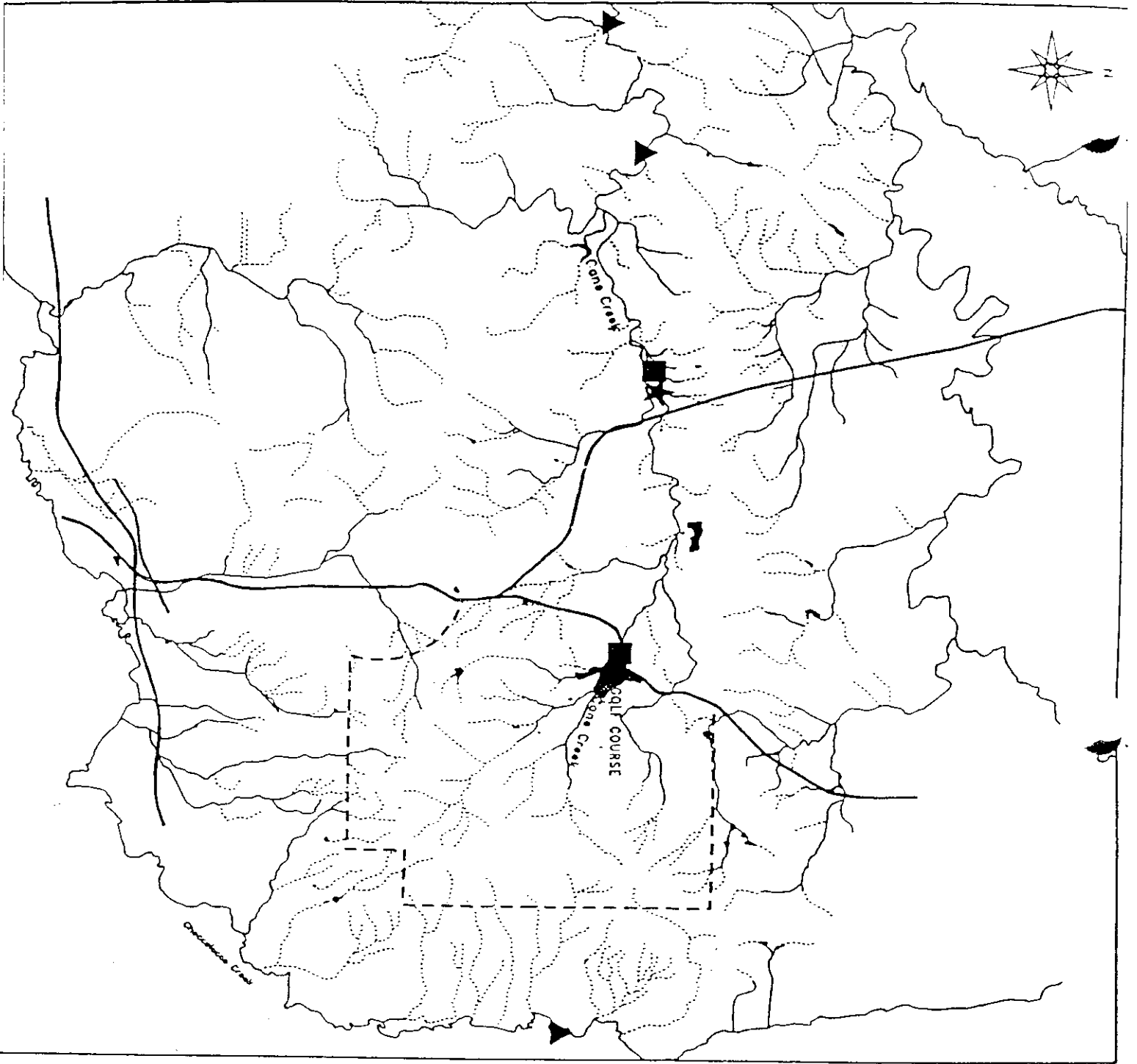


FIGURE 5-3. Location of gray bats captured on or near Main Post during mist net surveys in 1995, 1996, and 1997.

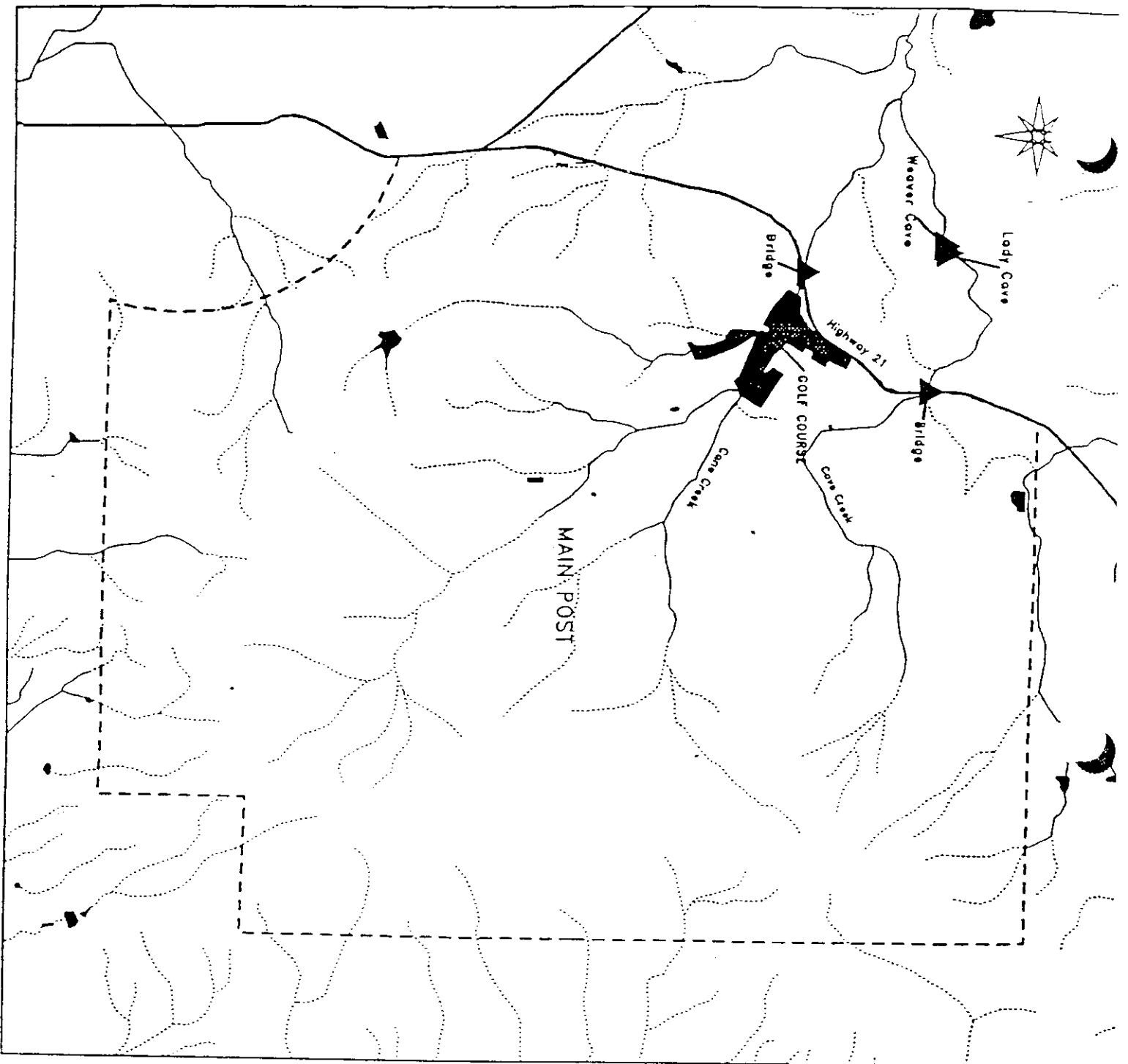
BIOLOGICAL ASSESSMENT
DISPOSAL AND REUSE OF
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3D/INTERNATIONAL, INC.

3D/International tracked two post-lactating females and one adult male captured over Cane Creek on Pelham Range to the region of Weaver Cave and Lady Cave (Figure 5-4). Previous investigations of these caves (4 July 1997) revealed no gray bats. On 29 July 1997, 3D/I discovered gray bats roosting in both caves. Seven gray bats, including the adult male and one of the post-lactating females with transmitters, were roosting in Weaver Cave. Thirteen gray bats were roosting in Lady Cave. The clusters of gray bats in these caves contained a mix of adult males, adult females, and juveniles.

5.4 ENVIRONMENTAL FATE OF FOG OIL AT FORT MCCLELLAN

3D/International assessed the environmental fate of certain chemicals used in training at Fort McClellan (3D/I 1996c). This study was completed to support the Biological Assessment for relocation of Fort McClellan training activities to Fort Leonard Wood. Soil, water, and vegetation samples were collected and analyzed for the presence of chemicals used during military training. Insects and bats also were collected and analyzed for presence of these chemicals in body tissues to determine potential effects to endangered bat species. Gray bats were first discovered on Fort McClellan during this study in August 1995. Gray bats were captured on Pelham Range and Choccolocco Creek (Figure 5-3).



**BIOLOGICAL ASSESSMENT
DISPOSAL AND REUSE OF
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**FIGURE 5-4. Known gray bat
roosts on or near Fort McClellan.**

▲ Gray bat roosts



3D/INTERNATIONAL, INC.

Section 6
Affected Environment

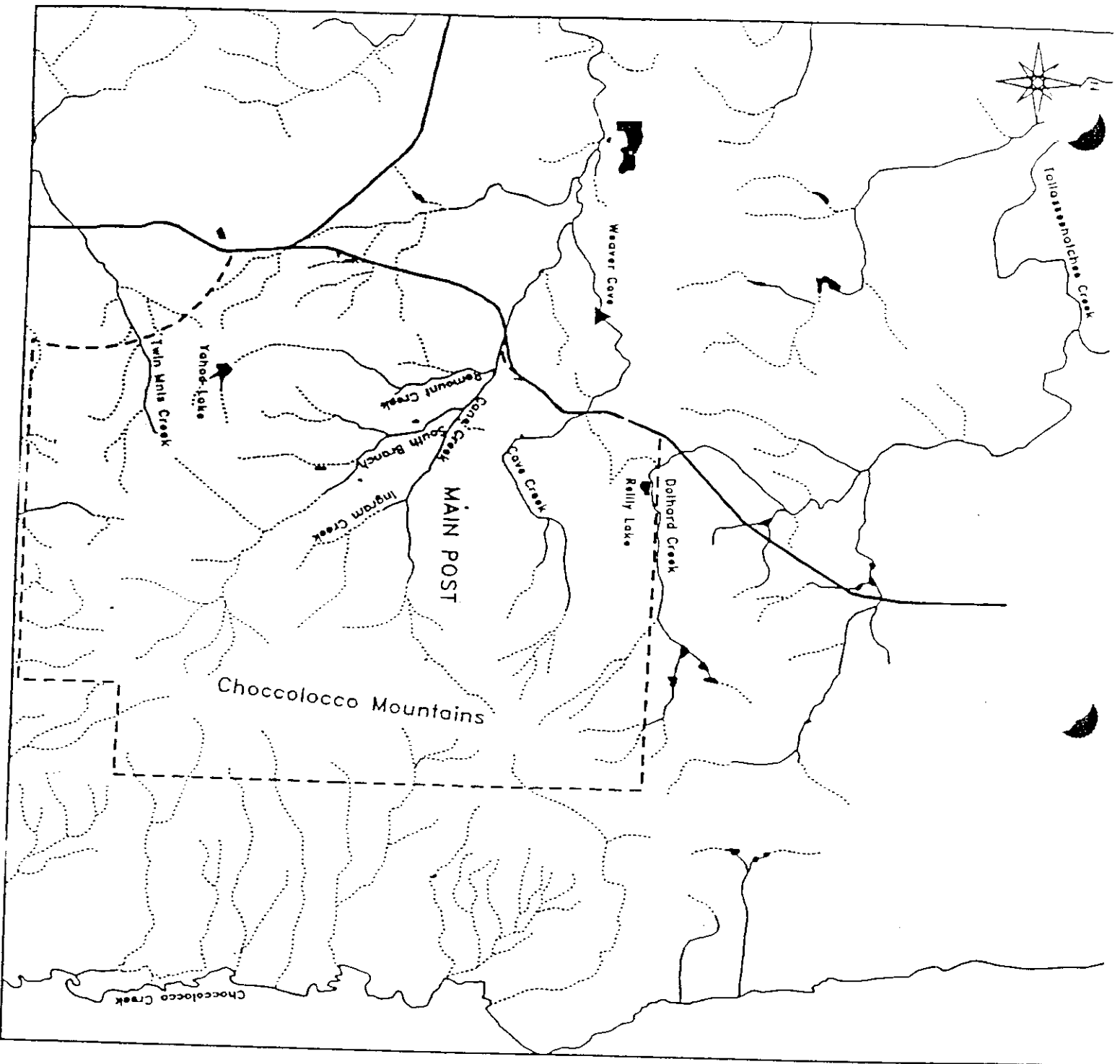
Section 6:

Affected Environment

6.1 PHYSIOGRAPHY AND SURFACE DRAINAGE

All but the eastern most portion of FMC lies within the Valley and Ridge physiographic province of the Appalachian Highlands. The portion of FMC west of Choccolocco Creek lies within the Piedmont province. The lower elevations [700 feet (210 meters) above mean sea level (MSL)] occur along Cane Creek, near Baltzell Gate Road, while the maximum elevations [2063 feet (619 meters) above MSL] occur on Choccolocco Mountain, which traverses the installation and the area in a north-south direction, with the steep easterly slopes grading abruptly into Choccolocco Valley. The western slopes are more gradual, with the southern extension maintaining elevations up to 900 feet (270 meters) above MSL near the western installation boundary. The northern extension decreases in elevation in the vicinity of Reilly Army Airfield. The central portion of FMC is characterized by flat to gently sloping land.

The Choccolocco Mountains, located in the eastern portion of FMC, form a major surface water divide. Choccolocco Creek and its tributaries drain this portion of FMC and flow southward to the Coosa River. FMC west of the drainage divide is drained by three creek systems, Cane, Choccolocco, and Tallassee hatchee creeks (Figure 6-1).



BIOLOGICAL ASSESSMENT
DISPOSAL AND REUSE OF
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FIGURE 6-1. Main Post Drainages.

□ Main Post Boundary

■ Pond / Lake

— Perennial Stream

..... Intermittent Stream

Miles
0 0.5 1 1.5

6.1.1 Surface Water

The Cane Creek watershed is among six major watersheds occurring within Calhoun County. Cane Creek, with its tributaries (Cave, Remount, South Branch, and Ingram creeks), originates on FMC (Figure 6-1). Cane Creek flows westerly across Main Post and Pelham Range and drains the majority of the installation [approximately 20 square miles (52 square kilometers)].

South Branch receives runoff from the south-central portion of Main Post, then joins Cane Creek before leaving Main Post on the western boundary. Cane Creek receives surface runoff from the central portion of Main Post. The north-central portion of Main Post is drained by Cave Creek, which leaves Main Post on the northwestern boundary. A small portion of the area along the northern installation boundary and north of the Cave Creek watershed, drains into the Tallassee hatchee Creek watershed (including its southern tributaries, Little Tallassee hatchee, Weaver's and Dothard creeks). Dothard Creek has headwaters originating both on and off the installation and drains the area around Reilly Lake (Figure 6-1). These creek systems originate on the western side of the Choccolocco Mountains and flow west through Main Post. They are fed by springs originating from underlying limestone strata.

Choccolocco Creek occurs to the east of the Choccolocco Mountains, passing along the eastern and southern portions of FMC. The Choccolocco Creek drainage includes four small tributaries originating near the southern boundary (Faison, Davis-Silver, Royal-Davis, and Twin Mountains creeks).

Surface water features other than streams and creeks within Main Post boundaries include Lake Yahou [13.5 acres (5.4 hectares)], Reilly Lake [8.5 acres (3.4 hectares)], Cappington Ridge [0.3 acres (0.12 hectares)], and Duck Pond [0.5 acre (0.2 hectares)]. Surface drainage is collected in small, independent networks that drain areas varying from 20 to 60 acres (8 to 24 hectares; Science Applications International Corporation 1993).

Freshwater springs occur throughout Calhoun County, often appearing along the trace of thrust faults (Moser and DeJamette 1992). On FMC, the springs appear as seeps and include the Marcheta Orchid Seep, Bains Gap Seep, Cave Creek Seep, and Marcheta Hill Crow Poison Seep. Unmapped springs and seeps potentially occur over much of the FMC area. Karst features, including sinkholes, have been identified in the area of FMC (U.S. Army Corps

of Engineers 1992). Weaver Cave interrupts the drainage of Cave Creek from FMC prior to its reemergence approximately 1300 feet (390 meters) downstream (Figure 6-1).

6.1.2 Surface Water Quality

Water quality on FMC has been characterized as predominantly good and provides for a suitable gray bat prey base as evident from the presence of this species. If water quality declines, aquatic-based prey could decrease, resulting in less suitable foraging habitat.

The State of Alabama has classified streams in this area as suitable for fish and wildlife use. Water quality surveys over the past 20 years have shown good water quality at most locations surveyed.

A number of studies provide baseline data on water chemistry and quality at FMC. A survey conducted by the U.S. Army Environmental Hygiene Agency (1976) found the streams of FMC to be of good chemical quality and in good biological condition. In this study, profiles at FMC sampling stations, had average water temperatures of 17.8°C, dissolved oxygen levels at 9.3 ppm, and average pH values of 7.5.

Environmental Science and Engineering studied surface water quality at four sites on the Installation in 1980. Data indicated the water had no unusual concentrations of organic or inorganic constituents. Dissolved oxygen was at or near saturation (range 7.8 to 12.1 mg/l), and specific conductance was very low for all samples (range 18 to 21 μ mhos/cm). Zinc and hydrocarbon concentrations were also low (range of <0.01 to 0.02 mg/l and 0.27 to 1.0 mg/l, respectively). Two sampling sites were located on Cane Creek, which drains FMC, including the golf course, the wastewater treatment plant, and urbanized areas surrounding Anniston, Jacksonville, and Pelham Range. The creek was found to be highly mineralized and the specific conductivity was elevated (range of 215 to 270 μ mhos/cm). Dissolved oxygen varied from 7.8 to 12.2 mg/l, indicating sufficient degradation of organic compounds. Dissolved zinc and hydrocarbon concentration were low (Ogden Environmental and Energy Services 1992).

Biotic surveys of Cane Creek were conducted in the fall of 1992 and again in the winter of 1993, at six sites along Cane Creek from the headwaters to the confluence with the Coosa River (Weninegar 1993). Surface water quality data was collected concomitant with the

biological surveys. Parameters examined included ammonia, carbon dioxide, chloride, dissolved oxygen, hardness, nitrites, pH, temperature, and turbidity. Ammonia concentrations ranged from 0.0 to 0.1 mg/l. Carbon dioxide levels varied from a low of 5 mg/l to a high of 20 mg/l. Chloride concentrations varied from lows of 15 mg/l at several stations to a high of 30 mg/l at an effluent dumpsite several meters below the Highway 21 bridge. Dissolved oxygen values ranged from a low of 6 mg/l to highs of 11.0 mg/l at the two stations closest to the headwaters. Nitrite values were low and ranged from 0.0 mg/l at several locations to a high of 1.2 mg/l. Values for pH were usually alkaline (7.4 to 8.2 pH units) at all stations except the one closest to the headwaters where the waters were slightly acidic (6.3 to 6.5 pH units). Temperatures ranged from 11.0° to 21.1°C. Only one station, that was closest to the mouth, had any measurable turbidity with a concentration of 1.0 NTU (Weninegar 1993).

Surface water quality data was collected as part of a multifaceted study done to characterize the geochemical signature of mineralized and highly altered rocks at FMC (Tucker et al. 1995). Results show the streams sampled to generally be of good water quality. Several of the springs sampled had slightly alkaline, mineralized water. One spring, on Range 21 had slightly elevated lead and copper values averaging about 16 and 6.1 parts per billion (ppb), respectively (Tucker et al. 1995). The study also stated that high levels of heavy metals could be a natural result of mineralization of the rocks and soils of the area. The study concluded that since springs and seeps are particularly influenced by the chemical composition of associated rocks and soils, high lead values at some sites could be the result of these nonanthropogenic processes (Tucker et al. 1995).

6.1.3 Geologic Structure

Fort McClellan lies almost entirely in the Valley and Ridge physiographic province of the Appalachian Highlands, where southeastward dipping thrust faults with associated minor folding are the predominate structural features. Consolidated rocks ranging in age from Precambrian to Pennsylvanian have sharply folded into northeastward-trending synclines and anticlines complicated by thrust faults that have a general northeastward-trending strike and southeasterly dip. These thrust faults are the predominant structural features of the Calhoun County area. The extreme eastern portion of FMC lies within the Piedmont physiographic province.

The Jacksonville Fault is a major thrust fault within the fold and thrust belt of the Appalachian

Highlands in Alabama. This fault is the most significant structural geological feature due to its role in determining the stratigraphic relationships in the area and for its contribution to regional water supplies. Cambrian and Ordovician rocks associated with the fault and adjacent structures include the Chilhowee Group; Shady Dolomite; Rome Formation; Conasauga Formation; Knox Group, undifferentiated; Newala and Little Oak Limestones, undifferentiated; and Athens Shale.

Changes in the structural style of the fault along the strike suggest a complex history of deformation. Stratigraphic separation on the fault decreases toward Bynum, Alabama, where the fault dies out on the foreland side of an apparently imbricated, southwestern plunging anticlinal fold making Coldwater Mountain and the southwestern end of Choccolocco Mountain. Hydrologic conditions in areas adjacent to the fault are controlled by both stratigraphy and structure. The permeability of rock units in the area is the result of secondary openings. The rock types with the greatest permeability are the highly fractured quartzite beds of the Weisner Formation and the fractured dolomite beds within the solution cavities of the Knox Group. All the other rock units have very low primary and secondary porosity and permeability. The greatest porosity and permeability occurs in a wide zone of fracturing where quartzite and dolomite are juxtaposed along the Jacksonville Fault. The wide fracture zone is most prominent southwest of FMC on the northwestern sides of the Choccolocco and Coldwater Mountains.

The Weisner Formation, characteristic of FMC, occurs to 2500-foot (750-meter) depths and consists of buff shale, siltstone, sandstone, quartzite, and conglomerate. Outcrops form hills or mountains of great relief. Quartzite and conglomerate are most conspicuous where they form crests or ledges along the southeastern side of Choccolocco Mountain. This mountain runs north to south, forming the eastern boundary of FMC. Locally, the Weisner Formation contains deposits of limonite, manganese, bauxite, and hematite.

6.2 LAND COVER

Main Post land cover consists of three general types associated with the level of existing disturbance and land management programs in place: improved grounds; semi-improved grounds; and unimproved grounds. Improved and semi-improved grounds have limited ecological resources value because of the high level of habitat disturbance and human activity. Unimproved grounds offer much higher ecological resource value.

Topography ranges from relatively level areas through much of the developed part of Main Post to hills and mountainous ridges. The oak-pine forest region dominates the general area containing Main Post. The area is transitional between north central deciduous forests and southern pine forests.

Most of the forested areas of Main Post have been cut in the past, leaving only very small stands of original timber in more rugged areas of the Choccolocco Mountains. The Alabama Natural Heritage Program (1994) conservatively identified eight general upland ecosystem community types occurring on FMC. Upland Ecological Plant Community Types for FMC include: Typic Mesophytic Forest; Piedmont Monadnock Forest; Interior Calcareous Oak-Hickory Forest; Basic Oak-Hickory Forest; Loblolly Pine-Shortleaf Pine-Oak Forest; Xeric Virginia Pine Ridge Forest; Dry Virginia Pine-Oak Forest; and Mountain Longleaf Pine Forest.

Forest types on Main Post vary according to local topography, soils, and ecological successional stage. An active tree planting program has been in operation for nearly 40 years. The forestry program at FMC has modified the commercial forest land cover through harvesting, thinning, strip disking, applying fertilizer and lime, prescribed burning, and planting activities.

The forest block on Main Post is ecologically important due to its large size and unfragmented condition, diversity and uniqueness of species and communities, rare species of animals and plants present, and general lack of exotics and disturbance. Decreased logging frequencies and periodic range fires that have allowed the plant communities to be maintained under natural conditions add to the ecological importance of this complex.

Virginia pine (*Pinus virginiana*) is found along ridges, and longleaf pine (*Pinus palustris*) occurs along the lower slopes of hills and ridges. Short-leaf pine (*Pinus echinata*) is most commonly encountered on more infertile soils.

Upland hardwoods are dominated by oak and hickory species. Mountainous hardwoods are dominated by chestnut oak (*Quercus prinus*), scarlet oak (*Q. coccinea*) and pignut hickory (*Carya glabra*). Hardwoods on upland slopes and hills are dominated by southern red oak (*Quercus falcata*), post oak (*Q. stellata*), chestnut oak, black oak (*Q. velutina*), blackjack oak (*Q. marilandica*), pignut hickory, and dogwood (*Cornus florida*). American beech (*Fagus grandifolia*),

tuliptree (*Liriodendron tulipifera*), white ash (*Fraxinus americana*), maple (*Acer* spp.), white oak (*Q. alba*), American holly (*Ilex opaca*), and redbud (*Cercis canadensis*) are present in ravines. Soil type and fire history are major factors in determining the composition of forests on Main Post.

Open areas also constitute a component of land cover. Open areas include upland oldfields, shrubland, and mowed fields. In each case, ongoing activities on Main Post either continually or occasionally manage the land in early ecological successional conditions. Generally open areas are used for training programs and as weapon firing impact areas.

The primary creek system on Main Post is Cane Creek. Springs and seeps occur throughout the area. There are also about 22 acres (8.9 hectares) of impoundments on the Main Post.

Relatively little is documented regarding vegetation communities associated with the creeks, springs, and seeps on Main Post. Ongoing research is underway to accurately map and characterize vegetation communities along springs and seeps in this area.

6.3 GRAY BAT HABITAT

6.3.1 Roosting

Gray bats typically roost in caves year round, though different caves are used at different times of the year. There are no known caves on Main Post. No habitat on or near Main Post has been designated as critical habitat by the Secretary of the Interior. In general, geomorphology of Main Post is not conducive to cave formation. Searches for karst features on Main Post during 1996 revealed no caves (3D/I 1996a).

Gray bats may travel as far as 22 miles (35 kilometers) from a roost to forage each night. Therefore, roosts used by gray bats foraging on Main Post are most likely within 22 miles of capture locations. Thirty-five caves are known within 22 miles of the gray bat capture sites on Main Post (Table 5-1; Figure 5-1). Eighteen of these caves are within Calhoun County. It is likely that other caves exist within 22 miles of Main Post.

Historical records suggest some caves near Main Post such as Weaver Cave and Lady Cave were previously occupied by large numbers of bats (McCalley 1897). Four caves near Installation boundaries were investigated for presence or sign of gray bats in February 1997.

(3D/I 1996b). Baswell Cave, Weaver Cave, Little Weaver Cave, and an unnamed cave approximately 164 feet (50 meters) south of Little Weaver Cave were entered and searched for gray bats or guano accumulation. No gray bats were found during the winter searches; however, gray bats were found roosting in Weaver Cave and Lady Cave on 29 July 1997 (3D/I 1997).

Gray bats occasionally roost in man-made structures (Barker 1986, Gingsby 1995, Hays and Bingman 1964). A colony of six adult male gray bats were found using the Highway 21 bridge over Cane Creek and a single gray bat was found using the Highway 21 bridge over Cave Creek (3D/I 1997). Both bridges are located just outside the western boundary of Main Post.

6.3.2 Foraging

Although no critical habitat for gray bats exists on or near Main Post, removal or degradation of suitable habitat in areas known to be used by gray bats may constitute take, which is prohibited by the ESA. 3D/International (1996a) characterized suitability of habitat on Main Post and Pelham Range to support foraging gray bats. Six streams and two lakes on Main Post were characterized as providing moderate quality habitat for gray bats (Figure 5-2). All other streams and ponds on Main Post provide low quality habitat due to their small size and lack of flight space. Of the six moderate quality streams, only Cane Creek is known to be used by gray bats (3D/I 1996b).

6.4 CURRENT MANAGEMENT GUIDELINES

The Draft Endangered Species Management Plan (DESMP) for FMC addresses the current status and management of endangered species found on the Installation (Garland 1996). The DESMP provides for protection of gray bat foraging habitat through protection of riparian forest. Forest management guidelines in the DESMP state only floodplain terraces that contain a major pine component undergo timber harvesting. The DESMP states management will focus on maintaining existing forested corridors along Cane Creek. These guidelines are to be revised and updated to include information attained from studies of gray bats completed after the DESMP was written.

After completion of the 1996 mist net surveys for gray bats, the following guidelines were proposed by the Army to aid in protecting foraging gray bats at FMC (3D/I 1996b):

- Fort McClellan will initiate ESA Section 7 consultation with the FWS for actions requiring tree clearing within 50 feet (15.2 meters) of streams designated as high or moderate quality gray bat foraging habitat, and for actions outside the stream border suspected of affecting gray bats.
- Conclusions of gray bat studies completed at Fort McClellan (3D/Environmental 1996a, 1996b) indicate activities along streams with low quality habitat will not affect gray bats. The FWS will not be consulted on tree clearing activities along streams designated as low quality foraging habitat for gray bats.

These guidelines have been reviewed and approved by the FWS (Appendix A), and will be incorporated in the Final ESMP.

Section 7
Effects Analysis/Discussion

Section 7:

Effects Analysis/Discussion

7.1 EFFECT OF DISPOSAL AND REUSE ACTIVITIES TO GRAY BATS

Because specific actions that will occur during the caretaker period, during disposal, and following encumbered disposal are not fully characterized, this analysis reflects avoidance of effects through application of PDFs (Section 2.6). These PDFs are an integral part of the proposed action.

Below, we assess the likelihood of direct, indirect, and cumulative effects to gray bats. We focus upon effects to summer and winter roosting habitat and summer foraging habitat, and exposure to unsafe concentrations of environmental contaminants.

7.1.1 Direct Effects

7.1.1.1 Roost Habitat

In general, activities that affect gray bats at maternity caves or hibernacula have potential to be most harmful to the species because large numbers of gray bats congregate at such roost sites. Four roost sites have been identified near FMC (3D/I 1997): Weaver Cave, Lady Cave, the Highway 21 bridge over Cane Creek, and the Highway 21 bridge over Cave Creek (Figure 5-4). These roosts support bachelor and/or transient roost sites located outside Installation boundaries. Because there are no known roosts within Installation boundaries, no caves exist

on Main Post, and no critical habitat exists within the action area, it is unlikely the proposed action will affect gray bats through modification of winter or summer roost habitat (caves and similar structures), or disturbance of roosting bats.

Caretaker and environmental restoration activities will not result in modification or disturbance to known gray bat roosts. All caretaker and restoration activities will be conducted within the boundaries of Main Post. All known gray bat roosts within the action area are outside of Main Post boundaries.

Potential exists for gray bats to use man-made structures within Main Post boundaries. During caretaker and environmental restoration activities, the Army will avoid effects to gray bats potentially roosting in man made structures by investigating presence of the bats prior to disturbance or removal of structures such as buildings, bridges, or cisterns. Project Design Feature No. 1 ensures the Army will conduct such investigations and avoid effects to gray bats roosting in man made structures within the action area.

Reuse of Main Post will not result in disturbance or modification of Weaver Cave or Lady Cave due to their distance from Main Post. However, road construction or improvements necessary for accommodating reuse of Main Post may require disturbance to bridges, including the two bridges outside the installation known to house gray bats. Resurfacing of the bridges, or other work of the type, if conducted when gray bats are present, may disturb the bats and cause at least temporary abandonment of the roost. Removal of bridges used by gray bats would destroy the roost. Project Design Feature No. 7 advises future property owners that gray bats are known to roost under bridges near Main Post and that alteration of man made structures should be completed only after investigations for gray bat presence. Direct effects to gray bat roosts from reuse are unlikely if protective measures in PDF No. 7 are employed by future landowners.

7.1.1.2 Foraging Habitat

Fort McClellan currently implements a management strategy developed in consultation with the FWS to avoid effects to high or moderate quality gray bat foraging habitat (Appendix A). Main Post contains no high quality foraging habitat, but does have moderate quality habitat. Project Design Feature No. 2 reflects the Army's commitment to continue the existing approach to protecting foraging habitat during caretaker operations and environmental restoration activities.

The Army will avoid effects to foraging habitat by protecting forest within 50 feet of streams providing moderate quality foraging habitat (Figure 5-2). Prior to disposal, the Army will consult with the FWS if construction, remediation, or other ground-disturbing activities are necessary within this 50-foot buffer zone.

Project Design Feature No. 7 advises future property owners that suitable foraging habitat for gray bats is present on their property and removal of trees within 50 feet of streams may constitute take of gray bats. Direct effects to gray bat foraging habitat from reuse are unlikely if protective measures in PDF No. 7 are employed by future landowners.

7.1.1.3 Exposure to Environmental Contaminants

In general, the potential for gray bats to be exposed to environmental contaminants used by the Army on FMC will be reduced as activities on Main Post move into caretaker status, environmental restoration is completed, and land is transferred to non-Army ownership.

The potential for Army environmental restoration activities to affect gray bats will be determined through site-specific assessments during the RI/FS phase. Environmental restoration procedures defined in Army Regulation 200-1 commit the Army to site-specific analyses and Section 7 consultation if assessments completed at the time of remediation indicate a likelihood of exposures exceeding safe levels (PDF No. 6). Screening level risk assessments will be completed to determine the likelihood of unsafe exposure. Potential exposure routes to be considered will include ingestion of contaminated prey and inhalation or dermal absorption of vapors or contaminated dust.

Pesticide use on Main Post will decrease as Army presence is reduced during caretaker status. However, the FMC golf course will maintain its current level of pesticide use until disposal. Pesticides use on the golf course was analyzed to determine potential adverse effects to gray bats. Guidelines for proper use of each pesticide used on the golf course were developed from product labels, material safety data sheets, and gray bat exposure risk factors (PDF No. 3). Pesticides are applied during daylight hours using broadcast spreaders, hand sprayers, and boom sprayers. Application method and timing eliminate potential inhalation and dermal absorption effects to foraging and roosting gray bats. Applying pesticides listed in Appendix B in accordance with protective measures in PDF No. 3 will prevent potential effects to gray bats due to ingestion of contaminated aquatic-based prey. Additionally, protective measures in

PDF No. 3 will avoid changes in prey abundance or diversity due to pesticide use on the golf course.

The future presence of environmental contaminants on Main Post lands and the potential that gray bats will be affected by exposure to unsafe concentrations, is difficult to predict. Reuse of Main Post lands will include a variety of industrial, commercial, residential, and recreational uses. Following transfer of property deeds, environmental protection and compliance with state and federal regulations will be the responsibility of the new landowners.

When portions of Main Post become the property of non-Army entities, pesticide use may be common and widespread. Use of commercially available pesticides on lands within Main Post may change following disposal. Regardless of future ownership, it is reasonable to expect relatively extensive use of pesticides on the golf course. Project Design Feature No. 8 notifies the future golf course owner of measures necessary to protect gray bats. Adverse effects to gray bats from future pesticide use on the golf course are unlikely if protective measures in PDF No. 8 are employed by the future owner.

7.1.2 Indirect Effects

Gray bats may be indirectly affected by modification of aquatic habitat supporting insects upon which gray bats feed. Habitat for gray bat prey may be adversely affected by environmental contaminants (discussed above), degradation of water quality, and adverse changes in stream channel structure.

Surface water quality will be maintained by the Army at its current status through application of PDF Nos. 4, 5, and 6. Potential effects resulting from contaminant release during environmental restoration will be evaluated during investigations prior to restoration activities (PDF No. 4). Compliance with NPDES permits and existing pollution prevention guidelines will continue until disposal (PDF No. 5). Erosion control measures described in PDF No. 6 will control and reduce transfer of soil into streams during ground disturbing activities.

The morphology of stream channels may be adversely modified through actions in and near the stream. Changes in morphology commonly include or lead to stream incision or stream channel widening, sedimentation, loss of channel stability, loss of flood plain function, and an increase in stream temperature. Adverse changes are commonly initiated by seemingly

benign activities, including misplacement of culverts in streams, poorly designed bridge crossings, unbridged road crossings, and individually minor but cumulatively damaging changes in watersheds. The Army proposes no activities requiring stream channel alterations.

Project Design Feature No. 7 advises future property owners that suitable foraging habitat for gray bats is present on their property and changes to stream morphology or water quality may result in adverse effects to gray bats. Indirect effects to gray bats from reuse are unlikely if protective measures in PDF No. 7 are employed by future landowners.

7.1.3 Cumulative Effects

Effects of the proposed action are described in this BA. Because the proposed action includes future "state and non-federal actions," the distinction between the direct and indirect effects analyzed above, and cumulative effects as defined by the ESA (see 50 CFR Ch. IV Part 402, Subpart A, Section 402.02) is less apparent than in a BA addressing site-specific actions.

Because the proposed action, including reasonably foreseeable future state and private actions will not affect gray bats, the proposed action will not contribute to cumulative effects of activities in the action area; no cumulative effects are anticipated. Federal actions not addressed in this analysis require action-specific assessment for ESA compliance.

7.2 STATEMENT OF FINDING

Disposal and reuse of Ft. McClellan is not likely to adversely affect gray bats in the action area.

Section 8
Literature Cited

Section 8:

Literature Cited

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Appendix A
Correspondence with the U.S.
Fish and Wildlife Service

Appendix A:

Correspondence with the U.S. Fish and Wildlife Service

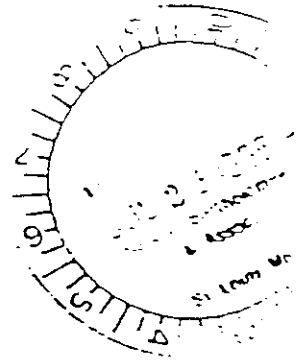


IN REPLY REFER TO

United States Department of the Interior

FISH AND WILDLIFE SERVICE
2001-A Highway 98
P. O. Drawer 1190
Daphne, Alabama 36526

July 25, 1996



Mr. Robert B. Bax
Vice President, Harland Bartholomew and Associates, Inc.
400 Woods Mill Road South
Suite 330
Chesterfield, MO 63017

Dear Mr. Bax:

This replies to your July 19, 1996 letter to Ms. Noreen K. Clough, Regional Director, U. S. Fish and Wildlife Service (Service) concerning a notification of intent to prepare an Environmental Impact Statement (EIS) for Fort McClellan, Alabama. This will confirm our receipt of your letter and to notify you that the Daphne Field Office at the letterhead address will serve as lead office for the Service on this issue. I plan to attend the prescoping meeting you have scheduled for August 6, at Fort McClellan.

You asked for a preliminary identification of key issues that should be considered in the EIS. At this time, we have identified on a preliminary basis two general issues, with many potential associated possible issues.

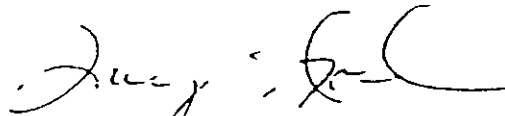
One major issue is the potential impact of alternatives on species listed by the Service as endangered or threatened. Information is already in the hands of the U. S. Army (Army) regarding these species and we understand that the Army is supporting information gathering on some species. The EIS should examine both impacts to listed species as a result of the Army possibly releasing this land as well as any needs for listed species recovery that might be forgone as a result of an ownership change. Likely direct and indirect impacts, including both on base and off base, should be considered.

The second major issue is the potential loss of the unique long leaf pine ecosystem found on large parts of the Main Post tract of land. This tract has been described as the best remaining example of the montane long leaf pine ecosystem in the world, thanks to the periodic fires that have run through the area as an indirect effect of military activities. Careful attention should be devoted in the EIS process to assembling information and expertise so that the value of this ecosystem and its needs are fully factored into the decision process. One important component from the Service's viewpoint is the value of the area to neotropical migratory birds and other avifauna that use the area. The Service believes it important that these natural values be sustained into the future, regardless of land ownership.

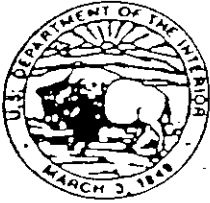
Corollary to these issues is the need to understand the likely environmental impact of any development are of the Main Post tract. The presence of what is thought to be a vast amount of unexploded ordnance in the undeveloped part of this tract presents a major question in terms of analyzing environmental impacts associated with development scenarios. If development of the currently forested lands is considered, then a detailed evaluation of the impact resulting from the associated ordnance removal would be an absolute necessity in order to understand the offsite impacts, particularly to listed aquatic mollusks and fish that are found in drainages around Fort McClellan. Since extensive earth moving would likely be necessary with this option, the effects to terrestrial wildlife could be severe.

We emphasize that this information is very preliminary and our position may change as new information is received. If you have any further questions, please contact me at (334) 441-5181.

Sincerely,

A handwritten signature in black ink, appearing to read "Larry E. Goldman", with a stylized flourish extending to the right.

Larry E. Goldman
Field Supervisor



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE

2001-A Highway 98

P. O. Drawer 1190

Daphne, Alabama 36526

February 6, 1997

Mr. Bill Garland, Biologist
Office of the Directorate of the Environment
Fort McClellan
Fort McClellan, Alabama 36205-5000

Dear Mr. Garland:

This concerns the document entitled *Investigations for the Presence of Gray Bats (Myotis grisescens) at Fort McClellan, Alabama* dated November 25, 1996 conducted by 3D/Environmental (3D/E) and a meeting at this office involving yourself, representatives of 3D/E and Sharon Delchamps of my staff on January 21, 1997.

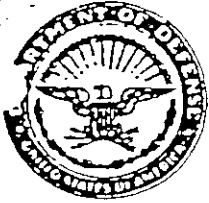
Based on the study results and meeting discussions, we have the following comments and recommendations:

1. We concur with page 25 of the report which states that Endangered Species Act Section 7 consultation between Fort McClellan and this office will be conducted for actions requiring tree clearing within 50 feet of streams designated as high or moderate quality gray bat foraging habitat and for actions outside the stream border suspected of affecting gray bats. For low quality gray bat foraging habitat, Section 7 will not be conducted.
2. As discussed in the meeting, we recommend that a radiotagging study be conducted for the gray bat on Main Post, particularly the golf course, to further aid in delineating foraging and roosting areas. We understand this study will take place during the summer of 1997. This will be the last effort to quantify this species and habitat utilization on Fort McClellan. No further gray bat studies on Pelham Range will be required.
3. The results of the study entitled *Environmental Fate of Fog Oil at Fort McClellan* conducted by 3D/E dated August 6, 1996 show that the components in the fog oil to be used on Fort McClellan are neither persistent in soils and water nor bioaccumulative in receptor organisms. Therefore, Section 7 consultation will not be required for fog oil exercises conducted at Fort McClellan. However, we recommend notifying our office immediately should the fog oil components or training exercises show adverse effects to this species or its habitat.

Should you require further information, please contact Ms. Delchamps at 334/441-5181 ext. 31.

Sincerely,

Larry E. Goldman
Field Supervisor



DEPARTMENT OF THE ARMY
U.S. ARMY CHEMICAL AND MILITARY POLICE CENTERS & FORT McCLELLAN
FORT McCLELLAN, ALABAMA 36205-5000

REPLY TO
ATTENTION OF

May 1, 1997

Directorate of Environment

Mr. Larry E. Goldman
Field Supervisor
U.S. Fish and Wildlife Service
P.O. Drawer 1190
Daphne, AL 36526

Dear Mr. Goldman:

Fort McClellan was recommended for closure by the Defense Base Closure and Realignment Commission during the summer of 1995. These recommendations became law under signature of the President on September 28, 1995. Approximately 18,500 acres on Main Post have been declared surplus property available for disposal by the Army and for reuse by others. The Army will retain all of Pelham Range (22,245 acres) and portions of the Main Post cantonment area (427 acres) for use by the Army Reserve/National Guard.

An Environmental Impact Statement (EIS) is currently in preparation to analyze the environmental effects of disposal and reuse alternatives for the surplus property. The Army's proposed action is disposal while reuse is a secondary action of others (non-Army). Reuse planning is the responsibility of the Fort McClellan Reuse and Redevelopment Authority of Alabama which is a locally chartered entity. A public scoping meeting was held on September 25, 1996, to obtain input from review agencies, interested groups and concerned individuals. U.S. Fish and Wildlife Service (USFWS) comments regarding this scoping meeting were provided in a letter to Mr. Robert Bax, dated July 25, 1996.

Fort McClellan would like to open informal discussions under Section 7 of the Endangered Species Act (ESA). While the Army intends to prepare a Biological Assessment (BA) to include listed species, early discussions will facilitate and ensure that all concerns are included in the consultation process. The attached Description of Proposed Action and Alternatives (DOPAA) provides a preliminary overview of the Army's proposed action of disposal and possible reuse alternatives. Irrespective of the reuse alternative, we believe the real key and focus of consultations should be the disposal action and the types of protection measures (deed covenants) to be placed on the specific parcels of property for protection of threatened and endangered species or their

habitat. In addition to the Army's proposed action of disposal, there is also the Army's interim period between closure and disposal. During this period there will be caretaker, environmental investigations and remediation, unexploded ordnance removal, and other actions to prepare property for transfer that may impact on threatened and endangered species. The impacts of these actions should also be part of our consultations.

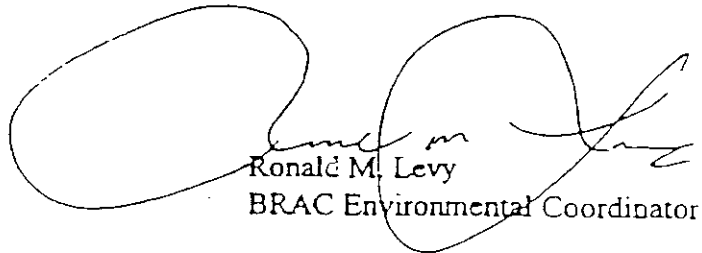
Fort McClellan has completed a Draft Endangered Species Management Plan (ESMP) that describes federally endangered/threatened species along with unique biological communities on the installation. The USFWS has reviewed this plan and provided concurrence within a letter dated April 18, 1996. This document will provide biological information for initiating informal consultation under Section 7 of the ESA. Some of the issues that we believe should be included in preliminary discussions deal with impacts to the following species during the interim period and protection measures to be established for disposal:

1. Gray Bat (*Myotis grisescens*) - Documented to utilize lower reaches of Cane Creek for foraging, particularly on the golf course. Mist netting and habitat suitability studies have been completed throughout the installation. A single male was captured at dusk on the golf course, which indicates a roosting cave in the local vicinity.
2. Red-cockaded Woodpecker (*Picoides borealis*) - This woodpecker has not been reported on Fort McClellan for several decades. A Piedmont Recovery Population is located adjacent to the installation within the Talladega National Forest. Active clusters are documented within 5-7 miles and potential habitat exists within Main Post. As specified within the ESMP, surveys are to be conducted on five year intervals (1997) to identify pioneering birds and possible new clusters.
3. White Fringeless Orchid (*Platanthera integrilabia*) - A species of concern that is undergoing status review by the USFWS. Indications from the USFWS are that this species could be listed in the foreseeable future. The plant has been located at two separate sites and studies are in place to locate possible new populations this summer.
4. Hawthorn (*Crataegus triflora*) - This plant occurs on limestone outcroppings at two locations on Main Post. Currently, this species is undergoing a status review by USFWS. Preliminary findings indicate this plant is more uncommon than previously believed. Depending on the outcome of the status review and recommendations by the USFWS, this species could be listed in the foreseeable future.

- 3 -

Fort McClellan looks forward to working with your office to assure the Army fulfills their obligations under Section 7 of the ESA. By initiating discussions early in the closure and disposal process, the Army can insure that all concerns involving endangered and threatened species are considered in assessing and selecting appropriate actions during the interim period and appropriate protection measures for disposal and reuse alternatives. If you should have any questions or require additional information, please contact the undersigned or Mr. Luke Owen at (205) 848-3539/5663.

Sincerely,



Ronald M. Levy
BRAC Environmental Coordinator

Enclosure

Copies Furnished:

U.S. Army Training and Doctrine Command, ATTN: Mr. David Taylor
U.S. Army Corps of Engineers, ATTN: Mr. Curtis Flakes



IN REPLY REFER TO

United States Department of the Interior

FISH AND WILDLIFE SERVICE

2001-A Highway 98

P. O. Drawer 1190

Daphne, Alabama 36526

May 27, 1997

Commander
U.S. Army Chemical and Military Police Centers & Fort McClellan
ATTN: ATZN-EM (Ron Levy)
Fort McClellan, AL 36205-5000

Dear Mr. Levy:

Thank you for the letter, dated May 1, 1997, concerning the disposal and possible reuse of Fort McClellan. The Service would welcome the opportunity to open informal discussions under Section 7 of the Endangered Species Act. Fort McClellan represents an important landscape scale remnant of the mountain longleaf pine ecosystem. Main Post on Fort McClellan has been described as the finest remaining example of this very rare cover type. We commend the Army for including both federally listed species, as well as, those species undergoing status reviews in these discussions.

Please contact Mr. Bill Garland of my office, (334) 441-5181 ext. 33, to coordinate the meeting time and place. We look forward to participating in these discussions and formulating a plan that insures the protection of endangered/threatened species, and the future of lands they inhabit.

Sincerely,

Larry E. Goldman
Field Supervisor



DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

REPLY TO
ATTENTION OF:

July 24, 1997

Environment and Resources Branch
Planning and Environmental Division

Mr. Larry Goldman
U.S. Fish and Wildlife Service
Post Office Drawer 1190
Daphne, Alabama 36526

Dear Mr. Goldman:

Please find enclosed the minutes from our July 1, 1997, meeting in the Mobile District. The meeting involved discussions of procedures to comply with the Endangered Species Act as related to the Fort McClellan Base Realignment and Closure action and the Disposal and Reuse Environmental Impact Statement.

Thank you and Mr. Bill Garland for contributing to a positive and successful meeting. We look forward to continuing to work with you to address the fish and wildlife concerns at Fort McClellan.

Sincerely,

Curtis M. Flakes
Chief, Environment and
Resources Branch

Enclosure

Contact Memorandum

EIS for Disposal and Reuse of Fort McClellan, Alabama

Memo Number: 31
 Person Contacted: See List Below
 Organization: US Fish & Wildlife Service
 Location: Mobile, Alabama
 Date: July 1, 1997
 Subject: T&E Species Coordination

A meeting was held at the US Army Corps of Engineers, Mobile District Offices on July 1, 1997 to discuss procedures to be used to comply with the Endangered Species Act as part of the EIS for the Disposal and Reuse of Fort McClellan (FMC), Alabama. Meeting participants included:

Name	Organization	Phone	Fax
B. David Taylor	HQ US Army Training & Doctrine Command, BRAC Office Fort Monroe, VA	757-727-4350	757-727-4374
Larry E. Goldman	US Fish & Wildlife Service Daphne, AL	334-441-5181 Ext. 30	334-441-6222
Curtis M. Flakes	US Army COE, Mobile	334-690-2693	334-690-2727
Brian Peck	US Army COE, Mobile	334-690-2750	334-694-3815
Bill Garland	US Fish & Wildlife Service Daphne, AL	334-441-5181	334-441-6222
John Esson	TRADOC Env. Office, Ft. Monroe	757-727-3335	757-727-2362
Karen Tyrell	3D/International	423-922-4305	423-922-8495
Ron Levy	BRAC Env. Coordinator Fort McClellan, AL	205-848-3539	205-840-5517
Russ Romme	3D/International	513-922-8199	513-922-9150
Greg Knauer	Parsons Engineering Science, Inc.	314-676-7330	314-576-2702
Bob Bax	Parsons Harland Bartholomew & Associates, Inc.	314-434-2900	314-576-2702

Introductions & Meeting Objective. All parties introduced themselves. Mr. Flakes (COE Project Manager for the Fort McClellan Disposal and Reuse EIS) provided introductory comments. He stressed the desire of the Mobile Corps to enter into a "partnering" relationship with the USFWS for the successful completion of an EIS for the Disposal and Reuse of Fort McClellan and related Endangered Species Act compliance. He confirmed that the primary goal of this coordination meeting was to discuss and agree on an approach to compliance that

Contact Memorandum

EIS for Disposal and Reuse of Fort McClellan, Alabama

was acceptable to both parties.

Army's Position on BRAC Threatened & Endangered (T&E) Species. Mr. Taylor stressed the need to comply with the President's "5-Point Plan" which is designed to emphasize prompt disposal and reuse of DOD property to the extent practicable within the confines of existing statutes and restoration procedures. He noted that the Army's direct action is to dispose of surplus property at FMC. Generally, Army policy is to support the Local Reuse Authorities reuse plan where it does not conflict with other federal statute or regulations. The desire is to transfer property with as few encumbrances as possible and, if encumbrances are required, that they have a foundation in federal regulatory requirements. After closure, but prior to disposal, the property will be maintained in "caretaker status", with a significantly reduced level of maintenance. Remediation and unexploded ordnance (UXO) removal of various parcels of surplus property will be completed consistent with the local communities proposed reuse, and within the limits and provisions established by law. After transfer of the property to a new owner(s), the Army's goal is to minimize their involvement. Therefore, the Army intends to transfer land management and development responsibilities to future owners to the maximum extent possible. Mr. Taylor pointed out that the NEPA process is important tool for informing the FMRRA and the public of potential impacts of their reuse plans.

Mr. Taylor also noted that the Army Reserve will maintain control and management responsibility of a substantial portion of the current FMC lands including the entire Pelham Range area. He noted that the Federal property screening process had been completed, and that no Federal agency expressed a formal interest in any of the surplus property at FMC. The Fort McClellan Reuse and Redevelopment Authority (FMRRA) is continuing to consider various requests from State and local entities as part of their ongoing reuse planning process. The Army anticipates that the FMRRA will request an "Economic Development Conveyance" of most or all of the surplus property for which there is no approved public benefit conveyance. Mr. Taylor closed by stressing that the Army will not have any direct control over the surplus property once it is disposed of. Therefore, it is critically important to identify constraints, or "encumbrances" that should be placed on the property as a condition of disposal as required to comply with applicable laws and regulations. Mr. Taylor also noted that the Army will not be in a position to enforce deed covenants and restrictions; rather, the regulatory agencies responsible for the enforcement of the statute or regulations which drive the restriction would be responsible.

Status of EIS. Mr. Bax provided an overview of the status of the EIS using the slides included as Attachment A to this memo. These comments addressed the EIS completion timeline, the structure of the alternatives analysis to be included in the EIS, the status of the FMRRA's reuse planning process, federally-listed T&E species of concern at FMC, and other species and resources of concern that could be impacted by the proposed Army disposal action, and reuse of the property by other (non-Army) parties.

It was noted that the environmental restoration process (including cleanup of unexploded ordnance, etc.) has the potential to have an adverse impact on numerous natural resource values at FMC. The environmental restoration process will continue well beyond the time allowed for the completion of the EIS and the T&E Biological Assessment; and that the restoration process has its own provisions for full disclosure of proposed actions, alternatives

Contact Memorandum

EIS for Disposal and Reuse of Fort McClellan, Alabama

and environmental impacts to the public and regulatory agencies. This process will be fully documented in the EIS.

The alternative structure was described in detail, including provisions for a No Action Alternative which involves maintaining surplus lands in "caretaker" status after closure but prior to disposal. It was noted that caretaker status could have an impact on T&E species at FMC. For example, if cessation of military operations reduced the occurrence of fires on training lands, and if no controlled burns were conducted under caretaker status (over long periods of time) fire-maintained habitat that potentially supports T&E species could be degraded or lost.

The approach to property disposal was described including consideration of "encumbered" and "unencumbered" disposal alternatives. Several examples were provided to help explain this process. It was explained that reuse alternatives to be considered in the EIS were all based on the most current reuse plan developed by the FMRR. Furthermore, reuse alternatives are based on general "Intensity-based" levels of redevelopment rather than site-specific, detailed reuse plans. It was noted that this intensity approach is used by the Army due to the uncertainty of future reuse actions.

A copy of the Preliminary Draft Environmental Impact Statement (PDEIS) (June 1997) was provided to Mr. Goldman at the conclusion of this coordination meeting. It was explained that this is an internal working document that is currently being reviewed by various Army entities, and that information within the document should not be released to any other parties at this time. No formal review by the FWS is required or requested. However, it was noted that any comments or concerns that may be identified by the FWS on the PDEIS should be directed by Mr. Flakes at the Mobile COE, and that any such comments would be fully considered as the Army proceeds with the preparation of the Draft EIS to be released to the public at a later date. In order to be considered by the Army review team, comments from the FWS should be provided no later than July 18, 1997. Comments received after that date will not be discussed by the total Army review team, but will still be considered and incorporated to the extent possible.

Mr. Bax noted that the PDEIS reuse alternatives were based on the latest plan provided by the FMRR. Therefore, the plan focused on approximately 7,200 acres of land primarily within the existing cantonment area at FMC. Minimal definition of proposed reuse of approximately 10,000 acres of more remote training areas has been provided to date. It was agreed by all that the Army must inform the FMRR that the EIS team needs additional details regarding the proposed reuse of the "natural" land areas at FMC. If this definition is not forthcoming in time to be incorporated in the DEIS, the EIS team will take the initiative to define the type and extent of land use activities to occur for these lands under the low, medium and high intensity reuse alternatives.

In order to allow for the concept currently being considered by the FWS (as summarized below), the Low Intensity Reuse Alternative would logically be defined as establishing a major part of these lands as a preserve area through a Public Benefit Conveyance (under direction of the state, a trust for public land, the Nature Conservancy, or some other entity). This alternative would result in very minimal human access and use, and would include provisions to continue land management procedures (such as prescribed burning) as required to protect and

Contact Memorandum

EIS for Disposal and Reuse of Fort McClellan, Alabama

enhance unique and sensitive resources. Under a Medium Intensity Alternative, the EIS would define a higher level of public access that could occur if the area is transferred to the FMRRRA under an Economic Development Conveyance. This alternative would include provisions for access roads, trails and associated staging areas and support facilities consistent with an overall land use designation of "passive recreational use". Finally, under the High Intensity Reuse Alternative, the EIS may assume a higher level of passive recreation use, or may even consider use of area ridgetops for the development of low-density residential development (which has been considered by the FMRRRA). This option would obviously increase the degree of associated passive recreation use of the remaining natural areas.

Status of T&E Studies at FMC. Mr. Levy provided an overview of the status of a number of biological studies that are ongoing at FMC to support the EIS process and associated T&E evaluations. A copy of the handout provided by Mr. Levy has been included as Attachment B to this memo. Studies described by Mr. Levy included: 1) Radio Telemetry Survey of Gray Bats; 2) Red-cockaded Woodpecker Survey on Main Post; 3) Reptile and Amphibian Survey of Fort McClellan; 4) Wetland Seep Survey; 5) Mollusk Survey of Aquatic Systems on Main Post and Pelham Range; 6) Willett Springs Ecological Surveys (Pelham Range); 7) Integrated Natural Resource Management Plan; 8) Longleaf Pine Studies.

USFWS Concerns with T&E Species at FMC. Mr. Goldman discussed the FWS's position regarding T&E species issues that must be considered as part of the EIS for the Disposal and Reuse of FMC. Stated that the FWS concurs with the Army's intent to prepare a Biological Assessment (BA) that will focus on the gray bat, and that consideration of this species will meet the Army's legal obligation under the provisions of the Endangered Species Act (ESA). Mr. Goldman stated that the FWS would like to see the Army include provisions as encumbrances, or at least as recommendations to future owners, to keep "options open" with regard to the status of the Red Cockaded Woodpecker (RCW) in the region. Mr. Bax commented that the EIS team welcomed comments from the FWS regarding future management recommendations that could be included in the EIS as a "recommended" course of action for future property owners, but that it was not likely that the Army could include these provisions as formal encumbrances to future property reuse.

Other USFWS Concerns. Mr. Goldman went on to explain that the FWS has scheduled a meeting for July 97 to discuss the White Fringeless Orchid, and steps that could be taken to avoid listing of this species. The population of these orchids at FMC is one of the top 2-3 known to occur, and past surveys have indicated that FMC property includes a considerable amount of habitat that could support this species. He also stressed that the EIS should make special note of the significance of the FMC ecosystem as a whole, and the adverse impacts associated with fragmentation of the resource on the total resource. Also, the EIS should identify what management procedures must be implemented in the future (after Army disposal) to maintain this resource (primarily prescribed burning program).

Mr. Goldman stated that the FWS has had numerous discussions with the local office of the Alabama Game & Fish Commission (AG&FC) regarding the concept of establishing a nature preserve to protect major portions of the FMC surplus property areas, and that the AG&FC has been very enthusiastic about this concept. (Note: the Alabama Forestry Commission had expressed interest in surplus property at FMC, but has recently declined further pursuit of these

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lands)

The FWS has a written preliminary document (presented as an ecosystem preservation project) that describes this option. Mr. Goldman indicated that this was not the traditional type FWS refuge project but that the Service has adopted ecosystems in principle. Under this option, the Army could grant a Public Benefit Conveyance to the US Department of Interior, who could then lease the property to the Alabama Game & Fish Commission. This preliminary document is currently under review by the FWS Atlanta office and that the Regional director had not made a decision. He noted that the State of Alabama has lost a considerable part of their lands that are available to the public for hunting, and that a preserve at FMC could help offset these losses. The timing of a final decision by FWS on this issue is unknown at this time. Therefore, the EIS will need to proceed on the basis of best available information. Mr. Taylor indicated that he was confident that the Army would support such a proposal and he would begin to lay the foundation for Headquarters, Department of the Army support of such a project. He noted that support of such a concept from the FMRRRA and inclusion in their reuse plan would also facilitate acceptance by the Army. Mr. Taylor noted that FMRRRA has hired Jacksonville State University to conduct a study on a wildlife refuge concept.

Discussion of T&E Issues. A variety of issues were discussed at this point to ensure that all parties had a common understanding. It was agreed that the existing information on the environment at FMC, in association with additional information to be provided by ongoing studies referenced above should be adequate to support the EIS and specifically, compliance with the Endangered Species Act. It was agreed that the BA would only address the gray bat, and that other species of interest or concern would be addressed in the EIS. It was understood by all that the BA will focus primarily on property disposal, which is the action to be taken by the Army. Protection of listed species from various reuse activities that could occur will be discussed primarily as recommendations to be included in the EIS for consideration by future owners, and the requirement for any such future owners to comply with the provisions of the Endangered Species Act as they apply to private (non-federal) property owners. It was agreed that the goal of the EIS/BA study team is to complete the BA prior to completion of the Draft EIS, and to reflect the findings of the BA in the Draft EIS. Finally, it was agreed that the BA for the proposed action may conclude with informal consultations with the FWS. Formal consultation and formulation of a Biological Opinion are not anticipated at this time. However, this could change based on the results of ongoing studies and surveys.

There was also discussion of the potential impact of environmental remediation and ordnance removal on T&E, other species of concern, and potential ecological damage in general. Mr. Taylor suggested that FWS should be actively involved in the public and regulatory review process for these actions.

Summary of Approach to Ensure Compliance with Endangered Species Act (ESA). Based on discussions that occurred during this meeting, Mr. Romme led the group through the key elements of the approach to be used to ensure that the Army's planned property disposal action complies with the provisions of the ESA. This approach is described below:

Goal. Conclude ESA compliance through the completion of a Biological Assessment within the established EIS schedule. Tentative completion date for the BA of September 1,

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1997 (one month prior to scheduled completion of Draft EIS). The BA may be published as a separate technical study, or included as a background data appendix to the Draft EIS.

Species to be Addressed in the BA. The only listed species known to occur on Main Post is the gray bat (federally endangered). RCW last occurred on Main Post in 1968. Potentially suitable habitat for the RCW is present on Main Post. Nearest occurrence is approximately 6 miles to the east, and therefore, the proposed BRAC action will not affect the RCW. Hence, the potential for effects to RCW will not be analyzed in the BA. Issues involving potentially suitable habitat at FMC for RCW, and other sensitive species, will be addressed through the NEPA process and documented in the EIS.

Action to be Assessed in the BA. The action to be evaluated at FMC includes three distinct components:

1. **No Action (Caretaker Status).** Potential caretaker actions (including property remediation and ordnance and explosive removal) will be described in as much detail as possible. However, the detail of this description will be limited by the fact that actual cleanup and removal actions are dependent on final reuse plans, and these actions will not be fully defined prior to the required completion of the BA and EIS process. Project design features (PDFs) in the BA and NEPA documents will be developed to avoid negative effects to the gray bat.
2. **Property Disposal.** Property Disposal is the primary Army action to be addressed in the EIS and BA. Project design features in the BA and NEPA document will be developed to avoid negative effects to the gray bat; and these features may include specific encumbrances in the form of deed restrictions, covenants, notifications, etc.
3. **Property Reuse.** The EIS will define the general type and intensity of reuse that is likely to occur on lands to be disposed of. However, the precise nature of reuse plans will not be known to the EIS/BA team, and therefore, the potential effects of these future actions on gray bats can't be fully characterized. The BA and EIS will note this fact, and explain that additional ESA compliance efforts may be required by reuse proponents as specific actions are identified for implementation. These future ESA compliance efforts, if any, will be the responsibilities of future (non-Army) owners.

The meeting was concluded by Mr. Taylor thanking Mr. Goldman for his participation and the open and positive discussions. The Army looks forward to a continuing dialogue and a positive working relationship for the completion of Endangered Species Act and the EIS, and USFWS involvement in seeking ways to preserve the unique natural resources at Fort McClellan while balancing economic recovery of the community. A win-win-win solution for the FMRRA, USFWS, and the environment.

List of Attachments:

- A. EIS Overview Slides
- B. Status of Fort McClellan Biological Studies

Appendix B
Product Summary and Guidelines for Pesticides
Used on FMC Golf Course

Appendix B:

Product Summary and Guidelines for Pesticides Used on FMC Golf Course

Product Summary and Guidelines for

Roundup® Herbicide

Roundup® is a herbicide that provides selective control of many annual and perennial grasses and broadleaf weeds. This herbicide is water-soluble and mixes readily with water to be applied as a foliar spray for the control and destruction of most herbaceous plants. The active ingredient, glyphosphate (isopropyl amine salt of N-phosphonomethyl glycine), is absorbed by the plant and attaches to growth sites within plant cells. The plant dies due to lack of certain amino acids. There is little or no residual from this herbicide and any of the product that is sprayed onto or reaches the soil will bind to the soil. The rainfastness of this herbicide is approximately two hours. Biodegradation rate in soil is approximately 45 to 60 days. Fort McClellan uses this herbicide to control winter weeds on fairways at the golf course.

Health Hazards

Roundup® may cause temporary eye damage or conjunctivitis. Roundup® herbicide can be absorbed through skin and cause skin irritation and dermatitis. Ingestion can cause gastrointestinal discomfort, nausea, vomiting, and diarrhea. Inhalation may cause upper respiratory irritation.

Environmental Hazards

There are no known hazardous decomposition products from Roundup®. Roundup® is moderately to slightly toxic to most species of fish. Roundup® is reported to be practically nontoxic to bees and crayfish.

Personal Protective Equipment

Respiratory = Use NIOSH approved cartridge type respirator when required

Eye = Chemical goggles or face shield; protective eyewear

Skin = Fabric coveralls over a long sleeved shirt and long pants, chemical resistant gloves, chemical resistant footwear plus socks, chemical resistant apron during mixing, cleaning, or loading.

Fort McClellan currently (1998) uses or anticipates using the following pesticides on the FMC golf course until the property is disposed.

Pesticide	Active Ingredient	Application Method	Target Pest	Areas Used	Manufacturers	Phone Nos. for Information
Daconil® 2787	Chlorothanil, Tetrachloroisophthalonitrile	Broyhill boom sprayer	Brown Patch	Greens and Tees	SDS Biotech Corporation (Agricultural Chemicals Business)	(440) 357-4182
Dursban 50W	Chlorpyrifos: (O,O-diethyl O-3,5,6-trichloro-2-pyridinylo	Broyhill boom sprayer	Amyworms and Cutworms	Greens and Tees	DowElanco	(800) 352-6776
2,4-D Amine 4	Dimethylamine salt of 2,4-Dichloro-phenoxyacetic acid	Broyhill boom sprayer	Weeds	Fairways	Riverside/Terra Corporation	(712) 277-1340
MSMA (Red Panther Super Juice)	Monosodium Acid Methane-arsonate	Broyhill boom sprayer	Weeds	Fairways	Green Light	(800) 424-9300
Pendimethalin (Pendulum® Herbicide)	N-(1-ethylpropyl)-3, 4-dimethyl-2,6-dinitrobenzamine	Broadcast spreader	Weeds	Fairways	American Cyanamid	(973) 683-3100
Illoxan® 3EC	2-[4-(2,4-dichloro-phenoxy) phenoxy] propanoate	Broyhill boom sprayer	Goose grass	Greens and Tees	AgrEvo	(800) 843-1702
Koban 30	Etridiazole	Broyhill boom sprayer	Crown and root rot (Pythium)	Greens and Tees	The Scotts Company	(703) 527-3887
Dimension®	Dithiopyr	Broyhill boom sprayer	Crabgrass	Fairways, Greens, and Tees	Rohm and Haas Company	(215) 592-3000
Roundup®	Ethoxylated Tallowamines	Handpump sprayer	Winter Weeds	Fairways	Monsanto Company	(314) 694-6661

Product Summary and Guidelines

for

Daconil® 2787 Fungicide

Daconil® 2787 is a broad-spectrum fungicide formulated for use on golf course greens, tees, and fairways. Fort McClellan's golf course uses this fungicide to control and treat Brown Patch. This protectant fungicide affects fungal spore germination. The fungicide is never absorbed into the plant. The active ingredient, chlorothanil, disrupts glutathion metabolism in the fungus. Daconil adheres to the plant (turf) and dissipates in about seven days. The fungicide is usually removed from the turf when mowing occurs. If the fungicide enters the soil, it binds to soil particles and may be present (undegraded) for up to 28 days. Biodegradation is dependent upon weather, temperature, sunlight, and microbes present. This product remains active for about seven days after application.

Health Hazards

Daconil® is corrosive and can cause severe eye damage. If ingested, it can cause irritation of the gastrointestinal tract. Daconil is considered an irritant of the respiratory tract, and chronic (repeated exposure) inhalation exposure can cause mild bronchial irritation. Chronic exposure to the skin has resulted in dermal irritation. This fungicide is not oncogenic, teratogenic, or carcinogenic.

Environmental Hazards

Daconil may decompose under fire conditions emitting toxic gases and vapors. This fungicide is toxic to fish, aquatic invertebrates, and marine/estuarine organisms. Runoff from treated areas may be hazardous to aquatic organisms in neighboring areas.

Personal Protective Equipment

Respiratory = NIOSH approved dust respirator or pesticide respirator

Eye = Chemical goggles or face shield

Skin = Protective rubber gloves

Application Guidelines

1. Do not spray directly onto or into water.
2. Do not spray when drift could carry fungicide into water.
3. Do not apply when weather conditions favor drift or runoff from treated areas.
4. Apply only to areas specified on label (golf course tees, fairways, and greens).
5. Must be used with good turf management practices.
6. On greens and tees, should follow a seven-day schedule.
7. Do not use Daconil® through sprinkler irrigation system on golf course.
8. Do not apply product through irrigation system connected to public water system.
9. Posting of areas to be treated is required if any part of the treated area is within 300 feet of (a) sensitive areas (residential, labor camps, business, daycares, schools, parks, playgrounds, or other public facilities not including roads; or (b) when chemigated area is open to the public (e.g., greenhouses).
10. Posting requirements = Posting at all points of entry and likely routes of approach or posted corners. Must be posted prior to application. Printed side to face away from area to be treated. Signs must be printed in English. Must remain in place indefinitely until foliage has dried and soil surface water has disappeared. All words and letters must be at least 2.5 inches tall. Colors must contrast. Top of sign must say keep out, followed by octagon sign saying stop. Octagon should be at least 8 inches in diameter. Sign should say pesticides in irrigation water.
11. Apply during daylight hours.
12. Mix as directed on label.
13. Apply only for approved uses.
14. Follow all general use directions as specified on label.

Disposal Guidelines

Completely empty bag into formulation equipment. Dispose of empty bag in a sanitary landfill or by incineration. Burning empty bag can be done if allowed by local and state authorities. Do not contaminate water supplies, water sources, or feed sources. Triple rinse container, puncture it, and place it in a landfill.

Effects to Gray Bats

Compliance with application guidelines and disposal guidelines as presented above, and strict adherence to application and mixing guidelines on the pesticide label will avoid potential direct and indirect effects to gray bats from use of Daconil® 2787.

Product Summary and Guidelines

for

Dursban 50W

Dursban 50W is a specialty insecticide formulated to control various pests injurious to tress, turf, and ornamental plants. It is an organophosphate insecticide with chloropyrifos as the active ingredient. This product affects insects by ingestion and contact through cholinesterase inhibition in the insect's metabolism. Dursban 50W is effective on over 140 pests. Fort McClellan uses this insecticide on the golf course to control and treat armyworm and cutworm infestations. Dursban binds tightly to organic matter in the soil and will not leach from the soil after application, even during heavy rainfall.

Health Hazards

Dursban may cause slight eye irritation and pain. Dursban can cause skin irritation. Ingestion of large amounts may result in serious injury or death. Single exposure to Dursban dust is not likely to be hazardous, but repeated or prolonged exposure may cause lung irritation or chemical pneumonia. Dursban is not known to be oncogenic, teratogenic, mutagenic, or carcinogenic.

Environmental Hazards

Dursban may decompose under fire conditions, emitting toxic gases and vapors. Dursban is toxic to birds and other wildlife. Dursban is extremely toxic to fish and aquatic invertebrates. Runoff from treated areas may be hazardous to aquatic organisms. Dursban is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow drift to blooming crops or weeds if bees are visiting the treated areas.

Personal Protective Equipment

Respiratory = MSHA/NIOSH approved dust respirator or pesticide respirator if applying in confined spaces

Eye = Chemical goggles or face shield

Skin = Waterproof gloves, long-sleeved shirt and long pants

Application Guidelines

1. Do not spray directly onto or into water.
2. Do not spray this product in a way that it will contact workers or other persons directly or through drift.
3. Adults, children, and pets should not contact treated surface until the spray has dried.
4. Keep out of fish pools and other bodies of water.
5. Do not spray when drift could carry Dursban into water.
6. Do not apply when weather conditions favor drift or runoff from treated areas.
7. Do not treat vegetable gardens.
8. Do not allow livestock to graze in treated area.
9. Do not feed treated grass cuttings to or seed screenings to livestock or use hay for livestock bedding.
10. Do not use in poultry houses or greenhouses.
11. Do not formulate this product into other end-use products (use only as specified on label).
12. Do not apply until winter rains or irrigation has replenished soil moisture such that bark and twigs are not desiccated.
13. Follow pest-specific directions.
14. Apply during daylight hours.
15. Mix as directed on label.
16. Apply only for approved uses.
17. Follow all general use directions as specified on label.

Disposal Guidelines

Do not contaminate water, food, or feed by disposal. Waste resulting from this product may be disposed of on-site or at an approved waste disposal facility. Dispose of all empty packages in a sanitary landfill or by incineration. Burning empty bag can be done if allowed by local and state authorities. Avoid inhalation of smoke if the container is incinerated.

Effects to Gray Bats

Compliance with application guidelines and disposal guidelines as presented above, and strict adherence to application and mixing guidelines on the pesticide label will avoid potential direct and indirect effects to gray bats from use of Dursban 50W.

Product Summary and Guidelines for

2,4-D Amine 4

2,4-D Amine 4 is a postemergent herbicide. The active ingredient in 2,4-D Amine 4 is dimethylamine salt of 2,4-dichlorophenoxyacetic acid. Fort McClellan uses this herbicide to control weeds on golf course fairways. The herbicide is absorbed into the plant and residue or excess is biodegraded after three days. Besides biodegradation, 2,4-D Amine 4 is degraded by ultra violet light. The rain fastness of this herbicide is approximately six hours, but is dependent upon soil type, weather conditions, and temperature at the time of application.

Health Hazards

2,4-D amine 4 is corrosive and can cause severe, irreversible eye damage (blindness). This herbicide can be absorbed through skin and cause skin irritation. If ingested, 2,4-D Amine 4 can be absorbed through the stomach and intestinal wall. Avoid breathing mists or vapors during application. Inhalation may cause upper respiratory irritation. Excessive exposure may cause liver, kidney, blood, gastrointestinal, muscular, and respiratory effects.

Environmental Hazards

2,4-D amine 4 may decompose under fire conditions emitting toxic gases and vapors. This herbicide is toxic to aquatic invertebrates. Runoff from treated areas may adversely affect aquatic invertebrates and nontarget plants. This product may injure cotton, beans (certain legumes), other vegetables, and ornamentals. Treatment of aquatic weeds with 2,4-D Amine 4 can reduce the water's oxygen content, which may cause fish to suffocate.

Personal Protective Equipment

Respiratory = Use approved respirator when required

Eye = Chemical goggles or face shield

Skin = Coveralls over a long sleeved shirt and long pants, waterproof gloves, chemical resistant footwear plus socks, chemical resistant apron during mixing.

Application Guidelines

1. Do not spray directly onto or into water.
2. Do not apply within 20 feet of banks or natural levees associated with streams, ponds, or lakes.
3. Do not enter the treated area without protective clothing until the area is dry.
4. Keep unprotected persons and pets out of the treated area until sprays have dried.
5. Keep out of fish pools and other bodies of water.
6. Do not spray when drift could carry 2,4-D Amine 4 into water.
7. Do not apply when weather conditions favor drift or runoff from treated areas.
8. Contain all spills to prevent contamination of groundwater.
9. Do not spray this product in a way that it will contact workers or other persons directly or through drift.
10. Follow pest-specific directions.
11. Apply during daylight hours.
12. Mix as directed on label.
13. Apply only for approved uses.
14. Follow all general use directions as specified on label.

Disposal Guidelines

Do not contaminate water, food, or feed by disposal. Waste resulting from this product may be disposed of on-site or at an approved waste disposal facility. Dispose of all empty packages in a sanitary landfill or by incineration. Burning empty bag can be done if allowed by local and state authorities. Avoid inhalation of smoke if the container is incinerated.

Effects to Gray Bats

Compliance with application guidelines and disposal guidelines as presented above, and strict adherence to application and mixing guidelines on the pesticide label will avoid potential direct and indirect effects to gray bats from use of 2,4-D Amine 4.

Product Summary and Guidelines
for
MSMA (Red Panther Super Juice)

MSMA (monosodium acid methanearsonate) is a postemergent herbicide. The active ingredient, monosodium acid methanearsonate) is mixed with a surfactant. MSMA works particularly well on grassy weeds. Fort McClellan uses this herbicide to control weeds on the golf course fairways. The herbicide's phytotoxic properties are quickly activated upon contact with soil. This herbicide works best on young actively growing weeds. It is absorbed into the plant and the soil. The herbicide remains active for approximately ten days after application.

Health Hazards

MSMA can cause mild eye damage. MSMA herbicide can be absorbed through skin and cause skin irritation. If ingested, MSMA can cause burning of the throat and stomach, intense abdominal pain, and gastrointestinal irritation. Avoid breathing mists or vapors during application. Inhalation may cause upper respiratory irritation, dizziness, stupor, vomiting, diarrhea, convulsions, paralysis, or death.

Environmental Hazards

MSMA may decompose and emit arsenic in the presence of acids and certain metals. This herbicide is toxic to aquatic organisms. Runoff from treated areas may adversely affect aquatic invertebrates and nontarget plants. Arsenic in this herbicide may accumulate in biota if used extensively.

Personal Protective Equipment

Respiratory = Use NIOSH approved dust and mist respirator when required

Eye = Chemical goggles or face shield

Skin = Coveralls over a long sleeved shirt and long pants, chemical resistant gloves, chemical resistant footwear plus socks, chemical resistant apron during mixing.

Application Guidelines

1. Do not spray directly onto or into water.
2. Do not feed treated grass to livestock.
3. Do not enter the treated area without protective clothing until the area is dry (12 hours after application).
4. Do not allow unprotected persons in area to be treated during application.
5. Keep unprotected persons and pets out of the treated area until sprays have dried.
6. Keep out of fish pools and other bodies of water.
7. Do not spray when drift could carry MSMA into water.
8. Do not apply when weather conditions favor drift or runoff from treated areas.
9. Contain all spills to prevent contamination of groundwater.
10. Do not spray this product in a way that it will contact workers or other persons directly or through drift.
11. Mow lawns 1 to 1.5 inches before treatment.
12. Apply during daylight hours.
13. Mix as directed on label.
14. Apply only for approved uses.
15. Follow all general use directions as specified on label.

Disposal Guidelines

Do not contaminate water, food, or feed by disposal. Waste resulting from this product may be disposed of on-site or at an approved waste disposal facility. Do not use empty containers. Triple rinse (or equivalent) and dispose by recycling, in a sanitary landfill or by incineration. Burning empty bag can be done if allowed by local and state authorities. Avoid inhalation of smoke if the container is incinerated.

Effects to Gray Bats

Compliance with application guidelines and disposal guidelines as presented above, and strict adherence to application and mixing guidelines on the pesticide label will avoid potential direct and indirect effects to gray bats from use of MSMA.

Product Summary and Guidelines for

Pendimethalin (Pendulum® WDG Herbicide)

Pendimethalin (Pendulum Herbicide) is a root and shoot inhibitor. The active ingredient is N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzene amine. This herbicide works inside the plant. It is a pre-emergent herbicide. Pendimethalin attaches to the roots of emergent weeds. It binds to the organic component of the soil. Generally, pendamethalin has a 14 to 21 day residual time, but this is dependent upon the organic content of the soil and other environmental characteristics of the area to be treated. Soil moisture is an extremely important factor in the ability of this herbicide to function. Pendimethalin comes in various forms; Fort McClellan uses the form coated on a fertilizer (Scotts 14-0-14).

Health Hazards

Pendimethalin is an eye irritant. This herbicide can be absorbed through skin and cause skin irritation. Single doses to skin may cause irritation. Ingestion of Pendimethalin may cause diarrhea, vomiting, and nausea. Ingestion or inhalation may cause nose, throat, or mouth irritation. Pendimethalin is reported to be nongenotoxic, nonteratogenic, and nononcogenic.

Environmental Hazards

Combustion of Pendimethalin may produce oxides of carbon and nitrogen. Pendimethalin is toxic to fish. Because Pendamethalin contains ethylene dichloride, it is regulated as a hazardous waste in the United States. Runoff from treated areas may adversely affect aquatic invertebrates and nontarget plants.

Personal Protective Equipment

Respiratory = Use pesticide cartridge respirator when required

Eye = Chemical goggles or face shield

Skin = Chemical resistant gloves, long-sleeved shirt and pants, shoes plus socks and chemical resistant apron

Application Guidelines

1. Do not spray directly onto or into water.
2. Keep out of lakes, streams, ponds, and other bodies of water.
3. Do not apply when weather conditions favor drift or runoff from treated areas.
4. Do not apply within 20 feet of banks or natural levees associated with streams, ponds, or lakes.
5. Do not use during gusty conditions.
6. Do not apply this product through any type of irrigation system.
7. Do not use this product in a way that will contact workers or other persons directly or through drift.
8. Do not use in manufacturing products for weed control.
9. Do not enter treated area until spray has dried.
10. Follow all application rates for weed control.
11. Apply during daylight hours.
12. Mix as directed on label.
13. Apply only for approved uses.
14. Follow all general use directions as specified on label.

Disposal Guidelines

Do not contaminate water, food, or feed by disposal. Waste resulting from this product may be disposed of on-site or at an approved waste disposal facility. Dispose of all empty packages in a sanitary landfill or by incineration. Burning empty bag can be done if allowed by local and state authorities. Avoid inhalation of smoke if the container is incinerated.

Effects to Gray Bats

Compliance with application guidelines and disposal guidelines as presented above and strict adherence to application and mixing guidelines on the pesticide label will avoid potential direct and indirect effects to gray bats from use of Pendimethalin.

Product Summary and Guidelines

for

Illoxan® 3EC Herbicide

Illoxan® is used for postemergent control of goosegrass (silver crabgrass) in Bermuda grass turf at golf courses. This herbicide is absorbed through leaves of the target pest and disrupts cellular function inside the plant. The active ingredient is diclofop-methyl. Little residue is left to enter the soil because of foliar absorption. If Illoxan is sprayed onto the soil, it will bind to the soil until biodegraded. Illoxan remains active for seven to fourteen days after application. Illoxan does not bioaccumulate.

Health Hazards

Illoxan® can cause eye damage. Illoxan herbicide can be absorbed through skin and cause skin irritation and prolonged exposure may lead to dermatitis. If ingested, Illoxan can cause muscle weakness, tremors, diarrhea, and weight loss. Avoid breathing mists or vapors during application. Inhalation may cause upper respiratory irritation, dizziness, vomiting, and loss of consciousness. Diclofop-methyl has been shown to cause cancer in laboratory rats. No embryotoxic or fetotoxic effects are noted for this product.

Environmental Hazards

Illoxan® is toxic to fish. This herbicide is toxic to aquatic organisms. Runoff from treated areas may adversely affect aquatic invertebrates and nontarget plants.

Personal Protective Equipment

Respiratory = Use NIOSH approved cartridge type respirator when required

Eye = Chemical goggles or face shield

Skin = Fabric coveralls over a long sleeved shirt and long pants, chemical resistant gloves, chemical resistant footwear plus socks, chemical resistant apron during mixing.

Application Guidelines

1. Do not spray within 100 feet of aquatic habitat.
2. Use with care when applying in areas near water bodies.
3. Avoid mowing treated area for 36 hours after application.
4. Do not apply if rainfall is expected within 1 hour of application.
5. Do not apply Illoxan® through any type of irrigation system.
6. Do not enter the treated area without protective clothing until the area is dry.
7. Do not allow unprotected persons to come in contact with product during application.
8. Keep unprotected persons and pets out of the treated area until sprays have dried.
9. Do not spray when drift could carry Illoxan into water.
10. Do not apply when weather conditions favor drift or runoff from treated areas.
11. Contain all spills to prevent contamination of groundwater.
12. Do not spray this product in a way that it will contact workers or other persons directly or through drift.
13. Apply during daylight hours.
14. Mix as directed on label.
15. Apply only for approved uses.
16. Follow all general use directions as specified on label.

Disposal Guidelines

Do not contaminate water, food, or feed by disposal. Waste resulting from this product may be disposed of on-site or at an approved waste disposal facility. Do not use empty containers. Triple rinse (or equivalent) and dispose by recycling, in a sanitary landfill or by other procedures approved by state and local authorities.

Effects to Gray Bats

Compliance with application guidelines and disposal guidelines as presented above and strict adherence to application and mixing guidelines on the pesticide label will avoid potential direct and indirect effects to gray bats from use of Illoxan®.

Product Summary and Guidelines for

Koban 30 Fungicide

Koban 30 is a preventative and curative fungicide that controls crown rot and root rot caused by Pythium. The active ingredient is 5-ethoxy-3-trichloromethyl-1,2,4-thiadiazole (etridiazole). This fungicide remains active approximately seven to ten days after application. It is effective as a seed treatment. Koban 30 is intended for use on ornamental turf subject to Pythium blight, damping off, cottony blight, and Pythium root and crown rot. Fort McClellan uses this fungicide to control Pythium on the greens and tees at the golf course.

Health Hazards

Koban 30 is a slight eye irritant. Koban herbicide can be absorbed through skin and cause skin irritation, and prolonged exposure may lead to dermatitis. Prolonged exposure to Koban 30 may lead to liver damage. Ingestion of large amounts can cause throat irritation, nausea, and diarrhea. Avoid breathing mists or vapors during application. Inhalation may cause upper respiratory irritation. Etridiazole has been shown to cause cancer in laboratory rats. Mutagenic effects were seen in bacteria mutagenicity tests conducted with etridiazole.

Environmental Hazards

Koban 30 may release toxic chlorine and oxides of sulfur and nitrogen when heated. Koban 30 is toxic to fish and aquatic organisms. Runoff from treated areas may adversely affect aquatic invertebrates and nontarget plants.

Personal Protective Equipment

Respiratory = Use NIOSH approved cartridge type respirator when required

Eye = Chemical goggles or face shield; protective eyewear

Skin = Fabric coveralls over a long sleeved shirt and long pants, chemical resistant gloves, chemical resistant footwear plus socks, chemical resistant apron during mixing, cleaning, or loading.

Application Guidelines

1. Do not apply this product directly onto or into surface water.
2. Do not apply within 20 feet of banks or natural levees associated with streams, ponds, or lakes.
3. Use with care when applying in areas near water bodies.
4. Do not apply Koban 30 through any type of irrigation system.
5. Do not enter the treated area without protective clothing until the area is dry.
6. Do not allow unprotected persons in area to be treated during application.
7. Keep unprotected persons and pets out of the treated area until sprays have dried.
8. Do not spray when drift could carry Koban 30 into water.
9. Do not apply when weather conditions favor drift or runoff from treated areas.
10. Contain all spills to prevent contamination of groundwater.
11. Do not spray this product in a way that it will contact workers or other persons directly or through drift.
12. Apply during daylight hours.
13. Mix as directed on label.
14. Apply only for approved uses.
15. Follow all general use directions as specified on label.

Disposal Guidelines

Do not contaminate water, food, or feed by disposal. Waste resulting from this product may be disposed of on-site or at an approved waste disposal facility. Do not use empty containers. Triple rinse (or equivalent) and dispose by recycling, in a sanitary landfill or by other procedures approved by state and local authorities. Empty container may be burned if allowed by local or state authorities. Avoid inhalation of smoke if the container is incinerated.

Effects to Gray Bats

Compliance with application guidelines and disposal guidelines as presented above and strict adherence to application and mixing guidelines on the pesticide label will avoid potential direct and indirect effects to gray bats from use of Koban 30.

Product Summary and Guidelines for

Dimension® Herbicide

Dimension® is a turf herbicide that provides selective control of certain annual grasses and broadleaf weeds. It is formulated for use on established lawns, ornamental turf including golf course fairways, roughs, tee boxes, and putting greens. Dimension® herbicide remains active for up to 17 days in the soil after application. The active ingredient in Dimension® is dithiopyr (3,5-pyridinesdicarbthioic acid). Dimension® is absorbed by plants and interrupts mitosis. Soil microbes eventually degrade any residual herbicide that remains in the soil. Fort McClellan uses this herbicide to control crabgrass on fairways, greens, and tees at the golf course.

Health Hazards

Dimension® may cause substantial but temporary eye damage. Dimension® herbicide can be absorbed through skin and cause skin irritation, dermatitis, and reddening. Repeated exposure to Dimension may lead to kidney effects, liver effects, blood disorders, thyroid damage, and adrenal effects. Ingestion of large amounts can cause throat irritation, nausea, and diarrhea. Inhalation may cause upper respiratory irritation, dizziness, headache, nausea, drowsiness, slurred speech, stupor, and unconsciousness.

Environmental Hazards

There are no known hazardous decomposition products from Dimension®. Dimension® is toxic to fish. This herbicide is toxic to aquatic organisms, including shrimp and oysters. Runoff from treated areas may adversely affect fish and aquatic invertebrates in neighboring areas.

Personal Protective Equipment

Respiratory = Use NIOSH approved cartridge type respirator when required

Eye = Chemical goggles or face shield; protective eyewear

Skin = Fabric coveralls over a long sleeved shirt and long pants, chemical resistant gloves, chemical resistant footwear plus socks, chemical resistant apron during mixing, cleaning, or loading.

Application Guidelines

1. Do not apply this product directly onto or into surface water.
2. Do not apply within 20 feet of banks or natural levees associated with streams, ponds, or lakes.
3. Use with care when applying in areas near water bodies.
4. Do not apply Dimension through any type of irrigation system.
5. Do not enter the treated area without protective clothing until the area is dry.
6. Do not allow unprotected persons to come in contact with product during application.
7. Keep unprotected persons and pets out of the treated area until sprays have dried.
8. Do not spray when drift could carry Dimension into water.
9. Do not apply when weather conditions favor drift or runoff from treated areas.
10. Contain all spills to prevent contamination of groundwater.
11. Do not spray this product in a way that it will contact workers or other persons directly or through drift.
12. Mix as directed on label.
13. Apply during daylight hours.
14. Follow all application guidelines on label; including frequency and timing.
15. Apply only for approved uses.
16. Follow all general use directions as specified on label.

Disposal Guidelines

Do not contaminate water, food, or feed by disposal. Waste resulting from this product may be disposed of on-site or at an approved waste disposal facility. Do not use empty containers. Triple rinse (or equivalent) and dispose by recycling, in a sanitary landfill or by other procedures approved by state and local authorities. Empty container may be burned if allowed by local or state authorities. Avoid inhalation of smoke if the container is incinerated.

Effects to Gray Bats

Compliance with application guidelines and disposal guidelines as presented above and strict adherence to application and mixing guidelines on the pesticide label will avoid potential direct and indirect effects to gray bats from use of Dimension®.

Product Summary and Guidelines for

Roundup® Herbicide

Roundup® is a herbicide that provides selective control of many annual and perennial grasses and broadleaf weeds. This herbicide is water-soluble and mixes readily with water to be applied as a foliar spray for the control and destruction of most herbaceous plants. The active ingredient, glyphosphate (isopropyl amine salt of N-phosphonmethhyl glycine), is absorbed by the plant and attaches to growth sites within plant cells. The plant dies due to lack of certain amino acids. There is little or no residual from this herbicide and any of the product that is sprayed onto or reaches the soil will bind to the soil. The rainfastness of this herbicide is approximately two hours. Biodegradation rate in soil is approximately 45 to 60 days. Fort McClellan uses this herbicide to control winter weeds on fairways at the golf course.

Health Hazards

Roundup® may cause temporary eye damage or conjunctivitis. Roundup® herbicide can be absorbed through skin and cause skin irritation and dermatitis. Ingestion can cause gastrointestinal discomfort, nausea, vomiting, and diarrhea. Inhalation may cause upper respiratory irritation.

Environmental Hazards

There are no known hazardous decomposition products from Roundup®. Roundup® is moderately to slightly toxic to most species of fish. Roundup® is reported to be practically nontoxic to bees and crayfish.

Personal Protective Equipment

Respiratory = Use NIOSH approved cartridge type respirator when required

Eye = Chemical goggles or face shield; protective eyewear

Skin = Fabric coveralls over a long sleeved shirt and long pants, chemical resistant gloves, chemical resistant footwear plus socks, chemical resistant apron during mixing, cleaning, or loading.

Application Guidelines

1. Do not apply this product directly onto or into surface water.
2. Do not apply within 20 feet of banks or natural levees associated with streams, ponds, or lakes.
3. Use with care when applying in areas near water bodies.
4. Do not apply Roundup® through aerial spray equipment, unless specified on the label.
5. Do not enter the treated area without protective clothing until the area is dry.
6. Do not allow unprotected persons to come in contact with product during application.
7. Keep unprotected persons and pets out of the treated area until sprays have dried.
8. Do not spray when drift could carry Roundup® into water.
9. Do not apply when weather conditions favor drift or runoff from treated areas.
10. Contain all spills to prevent contamination of groundwater.
11. Do not spray this product in a way that it will contact workers or other persons directly or through drift.
12. Do not apply at excessive pressure or speed.
13. Do not mix, store, or apply this product or spray solutions in galvanized steel or unlined steel (except stainless steel) containers.
14. Do not apply during low-level inversion conditions.
15. Apply during daylight hours.
16. Mix as directed on label.
17. Follow all application guidelines on label.
18. Apply only for approved uses.
19. Follow all general use directions as specified on label.

Disposal Guidelines

Do not contaminate water, food, or feed by disposal. Waste resulting from this product may be disposed of on-site or at an approved waste disposal facility. Do not reuse empty plastic containers. Triple rinse (or equivalent) (drums or cans) and dispose by recycling, in a sanitary landfill or by other procedures approved by state and local authorities. Empty container may be burned if allowed by local or state authorities. Avoid inhalation of smoke if the container is incinerated.

Effects to Gray Bats

Compliance with application guidelines and disposal guidelines as presented above and strict adherence to application and mixing guidelines on the pesticide label will avoid potential direct and indirect effects to gray bats from use of Roundup®.